

**Idaho Barley Commission &  
Montana Wheat & Barley Committee**

**"An Investigation of the Future  
Competitiveness of U.S. Malting Barley and  
Malt Exports to Mexico upon Full Access  
Liberalization under the North American Free  
Trade Agreement"**

**Funded by a grant from the USDA Federal State Market Improvement Program (FSMIP) to  
the Idaho State Department of Agriculture  
October 2003**

# Table of Contents:

<b>Executive Summary</b>	
<b>Section I: Introduction</b>	
1.1 Purpose	5
1.2 Background	5
1.3 Idaho and Montana Barley Production	6
1.4 U.S. Malting Plant Expansions	6
<b>Section II: North American Barley Production &amp; Exports</b>	
2.1 World Barley Production	7
2.2 World Barley Exports	7
2.3 Canadian Barley Production	7-9
2.4 Potential Impacts from Canadian Cattle BSE Situation	10
2.5 Canadian Barley Exports	10-11
2.6 CWB Control Over Exports	11-12
2.7 U.S. Barley Production	12-15
2.8 U.S. Barley Utilization	15
2.9 U.S. Barley Exports	15-16
<b>Section III: North American Malt Production &amp; Exports</b>	
3.1 Canadian Malt Production	17
3.2 Canadian Malt Exports	17-18
3.3 U.S. Malt Production	18-19
3.4 U.S. Malt Exports	20
3.5 Mexican Malt Production	20
<b>Section IV: North American Brewing Industry</b>	
4.1 Major Canada Breweries	21
4.2 Major U.S. Breweries	21-22
4.3 Major Mexico Brewers	22-24
<b>Section V: North American Free Trade</b>	25
<b>Section VI: Barley Rail Freight Rate Analysis</b>	
6.1 U.S. and Canadian Rail Systems	26-28
6.2 U.S. Rail Industry Profile and Cost Structures	28-29
6.3 U.S. Barley Rail Rate Analysis	29-31
6.4 Malting Barley Rail Rate Analysis	31-35
6.5 Mexican Railroads	35-36
<b>Section VII: Malt Rail Freight Rate Analysis</b>	
7.1 Malt Rail Rates	37-39
7.2 Malt Rail Rates To Mexico Cross-Over	39-42
7.3 Malt Rail Rate Analysis	42
<b>Section VIII: Summary and Conclusions</b>	43-45

## **EXECUTIVE SUMMARY**

### **Current Situation:**

The U.S. is currently the major supplier of high value malting barley and malt to Mexico, primarily as a result of favorable market access terms negotiated under the North American Free Trade Agreement. Under these NAFTA terms, the U.S. has enjoyed at least 66% market share of these products every year since NAFTA was implemented in 1994. The 2002 tariff-rate quota (TRQ) for U.S. malt and malting barley was 177,295 metric tons (80%), compared to 44,324 metric tons (20%) for Canada.

At the end of 2003, barley provisions of NAFTA were fully implemented and these tariff-rate quotas or TRQs were eliminated, paving the way for full market access at zero import tariffs for both U.S. and Canadian barley and malt.

For the past decade, Mexico has been the leading export customer of U.S. malting barley and malt. U.S. malting barley exports to Mexico in 2002 were 43,437 metric tons. U.S. malt exports were nearly 72,141 metric tons or more than 70% market share. Mexico produces approximately 70% of its own malting barley needs, but supplies are limited to six-row varieties that are adapted to local growing conditions. Therefore, Mexico must source its two-row malting barley needs from outside the country. These two-row supplies are currently being sourced from Idaho, Montana and Canada.

The demand for malting barley and malt is expected to remain very strong in Mexico, where beer demand has been growing at an annual rate of 5% or more for several years. By comparison, U.S. beer demand has grown at an annual rate of 1-2% in recent years. Per capita beer consumption in Mexico is currently 52 liters per year, compared to U.S. consumption rate of 90 liters, which indicates untapped growth potential in the Mexican brewing market. In addition, Mexico has a population of 100 million people, with a growing middle class that has adequate purchasing power to consume beer products. The population is also very young, estimated to be 50% under the age of 25, which is a positive demographic trend for future beer consumption.

These developments have raised a number of questions for U.S. barley producers, including the following:

- Since Mexico will continue to import its two-row malting barley needs for the foreseeable future, what are the main factors that will determine sourcing of these imports?
- What ability do Canadian malting barley and malt suppliers have to increase their exports to Mexico?
- What can U.S. barley and malt producers do to improve their competitive position in the Mexican market?

## **Issues Examined in this Study:**

This study looks at:

- (1) U.S. and Canadian malting barley production and export history.
- (2) U.S., Canadian and Mexican malt production and supply.
- (3) Rail freight rates that move barley, malting barley and malt within the U.S. and Canada.
- (4) Logistic rate structures that move malting barley and malt to the Mexican crossover points for rail delivery into the Mexican brewing industry.

## **Underlying Factors:**

- U.S. and Canada malting barley production have a tendency to mirror each other. When production is good in the northern U.S., production tends to also be good in Canada.
- Malt production capacity is increasing in the U.S., allowing for surplus malt production for export, given modest growth in domestic malt demand.
- Domestic malt consumption in Canada is relatively constant.
- Malt demand in Mexico continues to grow and one of the major brewing companies is increasing malt production in both Mexico and the U.S. to meet its Mexican domestic brewing needs.
- Canadian malt barley producers face higher transportation costs to get malting barley or malt to Mexico than U.S. producers, due primarily to greater distances to the Mexican market. Most Canadian origins for malting barley and malt are between 20 and 30% further from Texas rail cross-over points than US origins.
- The U.S. is expected to remain a dominant malt exporter to Mexico.
- Mexico's growth in beer production has exceeded U.S. annual growth rates in the last 3-5 years.
- The competitiveness of Mexican beers in the U.S. domestic market will continue to grow. Two leading Mexican beer exports – Corona and Tecate -- now hold a 28.7% and 4.1% share respectively of U.S. beer imports (3.11% and .46% overall share of U.S. beer market).

## **Conclusions and Outlook:**

U.S. malting barley and malt have significant logistical advantages moving to Mexico over competing supplies in Canada. This logistical disparity should continue to assure U.S. malting barley and malt suppliers with a competitive advantage into Mexican markets in the future. Furthermore, U.S. rail carriers will not be inclined to allow increasing malt or malt barley movements by Canadian rail competitors without market reaction.

One major Mexican brewing company is building a new malt plant in the U.S. to supply its two-row barley malting needs from the U.S. We expect continued dominant competitive positions for U.S. maltsters in future trade with Mexico, assuming adequate supplies are available for export.

## **SECTION I: INTRODUCTION**

### **1.1 Purpose**

The Idaho Barley Commission and the Montana Wheat and Barley Committee collaborated on a study of the future competitiveness of U.S. malting barley and malt exports to Mexico, compared to Canadian sources, upon full implementation of the barley provisions of the North American Free Trade Agreement in 2003. This study identifies and quantifies the primary factors that will influence the flow of the U.S. and Canadian barley and malt to Mexico in the future.

#### **Objective I**

Prepare a detailed comparison of U.S. and Canadian barley and malt supplies and transportation logistics and freight rates from U.S. and Canadian sources to Mexican destinations.

#### **Objective II**

Assess future U.S. and Canadian barley and malt supply trends and Mexican demand, including variety preferences of the Mexican end users.

### **1.2 Background**

The U.S. is currently the major supplier of high value malting barley and malt to Mexico, primarily as a result of favorable market access terms negotiated under the North American Free Trade Agreement. Under these NAFTA terms, the U.S. has enjoyed at least 66% market share of these products every year since NAFTA was implemented in 1994. The 2002 tariff-rate quota (TRQ) for U.S. malt and malting barley was 177,295 metric tons (80%), compared to 44,324 metric tons (20%) for Canada.

Effective in 2003, barley provisions of NAFTA were fully implemented and these tariff-rate quotas or TRQs were eliminated, paving the way for full market access at zero import tariffs for both U.S. and Canadian barley and malt. The question for U.S. barley producers, malt processors and handlers is whether we can maintain our current market share when we are faced with open market access and stiff competition from Canadian malting barley and malt.

For the past decade, Mexico has been the leading export customer of U.S. malting barley and malt. U.S. malting barley exports to Mexico in 2002 were 43,437 metric tons, valued at more than \$11.2 million. U.S. malt exports were 72,141 metric tons, valued at more than \$24.2 million. U.S. malt exports to Mexico increased by more than 60% in the past five years (1998 to 2002).

Mexico produces approximately 70% of its own malting barley needs, but supplies are limited to six-row varieties that are adapted to local growing conditions. Therefore, Mexico must source its two-row malting barley needs from

outside the country. These two-row supplies are currently being sourced from Idaho, Montana and Canada. Also, one of the leading Mexican beer manufacturers has a brewing facility near the California border and sources all of its malt from the U.S. and Canada.

The demand for malting barley and malt is expected to remain very strong in Mexico, where beer demand has been growing at an annual rate of 5% or more for several years. By comparison, U.S. beer demand has grown at an annual rate of 1-2% in recent years. Per capita beer consumption in Mexico is currently 52 liters per year, compared to U.S. consumption rate of 90 liters, which indicates untapped growth potential in the Mexican brewing market. In addition, Mexico has a population of 100 million people, with a growing middle class that has adequate purchasing power to consume beer products. The population is also very young, estimated to be 50% under the age of 25, which is a positive demographic trend for future beer consumption.

### **1.3 Idaho and Montana Barley Production**

Idaho and Montana are the second and third largest barley producing states in the U.S., behind only North Dakota in total production, and are the largest suppliers of two-row malting barley in the United States. Idaho produced nearly 54 million bushels of barley in 2002, with 53% of that planted to two-row malting varieties. Montana produced nearly 40 million bushels, with 56% planted to two-row malting varieties. Combined, the two states generated more than \$280 million in farm-gate receipts from barley production in 2002.

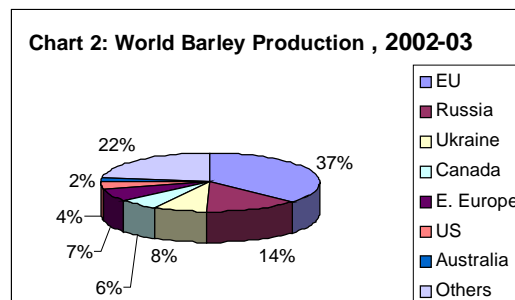
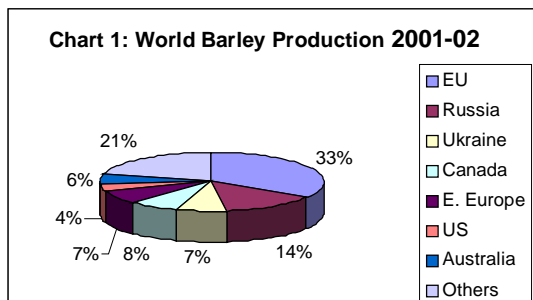
### **1.4 U.S. Malting Plant Expansions**

The major U.S. brewers and maltsters have recently begun adding new capacity to the U.S. malt industry. Anheuser Busch is doubling its existing malt plant in Idaho Falls, ID, from 8 million bushels (125 TMT) to 16 million bushels (250 TMT). International Malting Co. (Froedtert) announced they would begin construction of a 8 million bushel plant (125 TMT) in Great Falls, MT, this year. Additionally, Froedtert is completing expansion of its existing Winona, MN malt plant with four new kilns with an increase in production from 5 million bushels (77 TMT) to 7.5 million bushels (115 TMT). Grupo Modelo, Mexico's largest brewing company also is constructing a 6.5 million bushel (100 TMT) malt plant in Idaho Falls. These expansions are expected to be on-line in early 2005 (will process 2004 barley).

## SECTION II: BARLEY PRODUCTION AND EXPORTS

### 2.1 World Barley Production

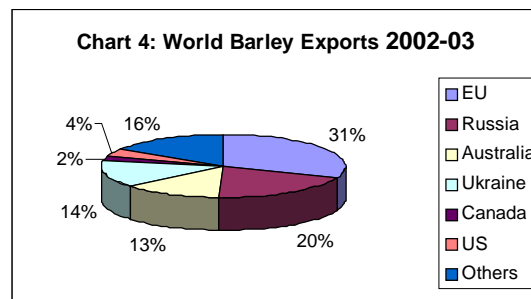
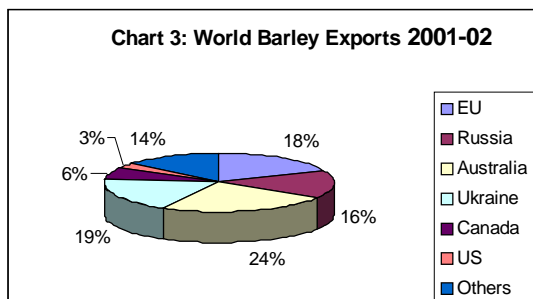
World barley production totaled 142.1 MMT in MY 2001-02 and 132.4 MMT in MY 2002-03. U.S. and Canadian production totaled 5.4 MMT and 10.8 MMT in MY 2001-02 and 4.9 MMT and 7.3 MMT in MY 2002-03. Major barley producing countries are identified in Charts 1 and 2 below.



Source: USDA/FAS Grain: World Markets & Trade

### 2.2 World Barley Exports

World barley exports totaled 17.3 MMT in MY 2001-02 and 16.2 MMT in MY 2002-03. U.S. and Canadian exports totaled .52 MMT and 1.1 MMT in MY 2001-02 and .65 MMT and .4 MMT in MY 2002-03. Major barley exporting countries are identified in Charts 3 and 4 below.

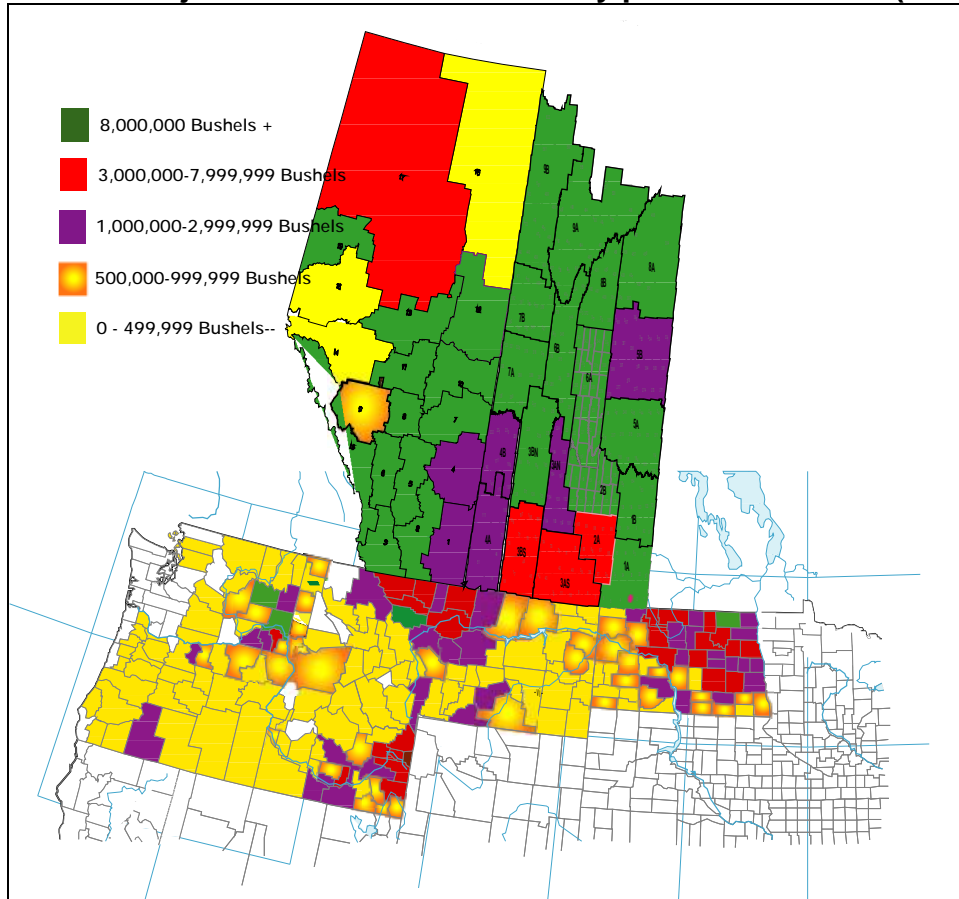


Source: USDA/FAS Grain: World Markets & Trade

### 2.3 Canadian Barley Production

Recognizing there have been significant year-to-year fluctuations in production in recent years due to prolonged drought conditions, we have chosen to use five-year production averages, or in some cases, ten-year averages. The Canadian barley growing areas are principally located in Alberta, Saskatchewan and Manitoba. The Canadian barley production outlook for the 2003 season initially looks to be much better than the two previous years.

**Chart 5: Major U.S. and Canadian barley production areas (density)**



Canadian barley production averaged 12.8 million metric tones (MMT) on a 10-year average (1991-2001). Most Canadian barley is grown on the western prairies, and Alberta accounts for about 45-50% of the annual production. Saskatchewan is second with about 25% of the nation's barley, and Manitoba is third.

Alberta is Canada's largest malting barley and malt producer. Traditionally, in excess of 60% of Alberta malting barley production is exported, primarily to Asian destinations. Canadian exports over the last 10 years were heavily to non-North American destinations with 67.6% destined outside North America, 30.7% to the U.S. and only about 1.6% to Mexico.



**Table 1: Canadian Barley Production by Province in 1992-2001 (000 MT)**

Year	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	Average
PEI	141.2	91.7	86.9	93.7	118.4	136.3	135.9	94.4	128.8	97.2	112.5
N.S.	14.3	13.5	14.4	16.7	17.2	16.7	20.1	13.0	12.9	11.7	15.1
N.B.	51.4	45.6	34.9	44.3	56.1	52.6	40.8	45.6	56.6	54.9	48.3
Que.	560.0	435.0	340.0	350.0	355.0	415.0	425.0	415.0	405.0	520.0	422.0
Ont.	531.4	500.8	446.3	418.0	391.9	435.4	381.0	394.1	287.4	424.6	431.1
Man.	1567.6	1241.0	1328.1	1328.1	2111.9	1685.2	1630.8	1214.9	1622.0	1234.5	1496.4
Sask.	3157.0	4245.6	3919.0	4354.5	5356.0	4430.7	4310.9	4942.3	5477.9	3655.6	4385.0
Alta	4855.3	6314.0	5464.9	6335.8	7076.0	6270.5	5660.8	5987.4	5388.7	4746.4	5810.0
B.C.	53.3	84.9	55.5	93.6	79.5	84.9	103.4	89.3	88.8	100.7	83.4
Total	10931.5	12972.1	11690.0	13034.7	15562.0	13527.3	12708.7	13196.0	13468.1	10845.6	12803.8

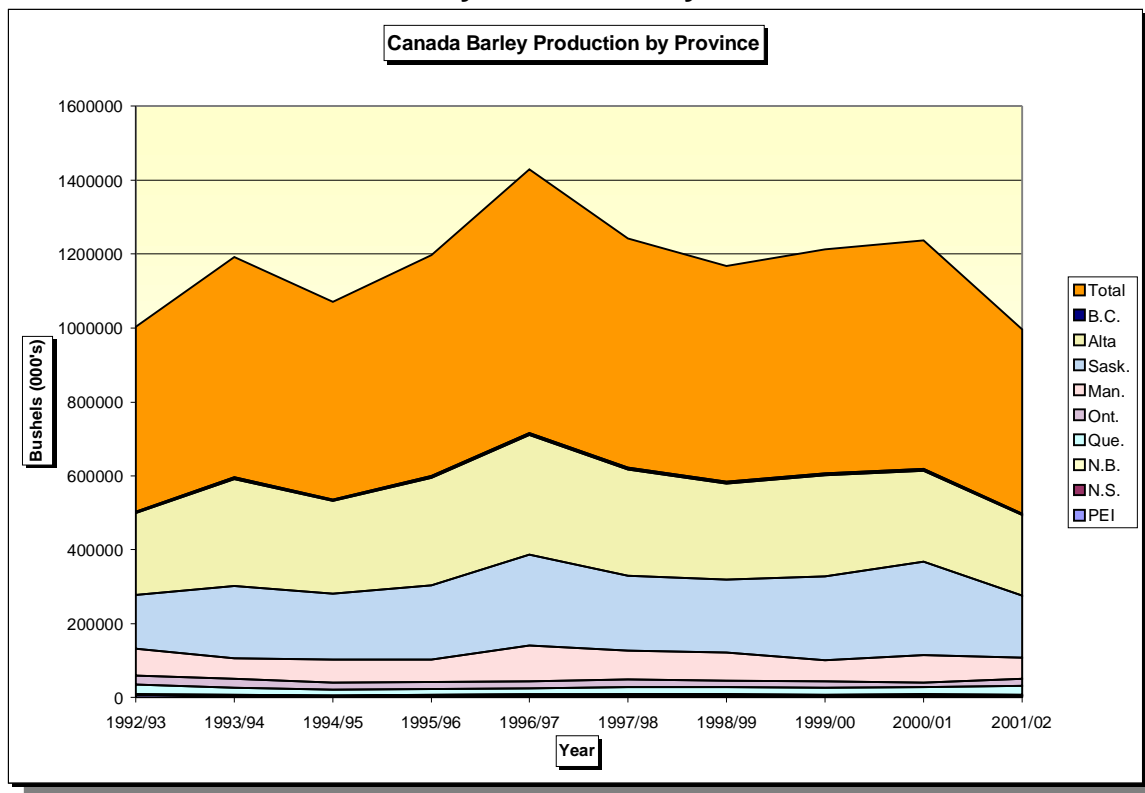
Source Field Crop Reporting – Statistics Canada

**Table 2: Canadian Barley Production by Province in 1992-2001 (000 bu)**

Year	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	Average
PEI	6485	4211	2991	4303	5438	6260	6241	4335	5915	4464	5167
N.S.	656	620	661	767	789	767	923	597	592	537	693
N.B.	2360	2094	1062	2034	2576	2415	1873	2094	2599	2512	2218
Que.	25720	19979	15615	16075	16304	19060	19519	19060	18601	23883	19382
Ont.	24406	23001	20498	19198	17999	19997	17498	18100	13199	19501	19799
Man.	71998	56997	60998	60998	96997	77399	74901	55799	74496	56699	68725
Sask.	144997	194996	179995	199997	245995	203497	197995	226994	251594	167898	201398
Alta	222999	289995	250997	290996	324993	287988	259994	274995	247497	217997	266847
B.C.	2448	3899	2549	4298	3651	3899	4749	4101	4078	4625	3830
Total	502069	595792	536361	598666	714742	621282	583693	606075	618571	498125	588062

Source Field Crop Reporting – Statistics Canada

**Chart 6: Canadian Barley Production by Province for 1993 - 2002**



## 2.4 Potential Impacts from Canadian cattle BSE situation

The current import freeze on Canadian cattle may have lingering effects on future barley production. Generally an expansion of the domestic livestock industries is viewed as a positive for the Canadian malting industry. The theory is that a strong domestic feed industry increases the amount of competition for Canadian barley supplies, based upon the assumption that areas seeded to barley increases as livestock production increases and the maltsters may have more high quality barley to select from and may have improved selection quality. The effects of the Canadian cattle import embargo into U.S. and other export markets is likely to have a lingering and possible major impact on Canada's barley production in the near term. Initial 2003 crop forecasts called for a substantial increase in barley production, however recent heat stress is likely to reduce crop expectations.

## 2.5 Canadian Barley Exports

Canadian barley exports have ranged from 1.1 MMT to 3.8 MMT during the past 10 years. The largest exports have gone to Japan (feed), U.S. (malting) and China (malting).

**Table 3: Canadian Barley Exports by Destination in 1992–2001 (000 MT)**

North America	1991/92	1992/93	1993/94	1994/95	1995/96	1996/7	1997/98	1998/99	1999/00	2000/01	Average
U.S.	473	174	1791	1255	782	913	687	564	595	597	783
Mexico	70	17	25	0	57	3	54	62	99	34	42
Total N.A.	543	191	1817	1255	839	916	741	626	694	631	825
Total Exports to All Countries	3341	2704	3772	3010	2332	3439	2127	1101	1727	1941	2549
% to NA	16.25%	7.06%	48.17%	41.69%	35.98%	26.64%	34.84%	56.86%	40.19%	32.51%	32.37%
Total Not Including N.A.	2798	2513	1955	1755	1493	2523	1386	475	1033	1310	1724

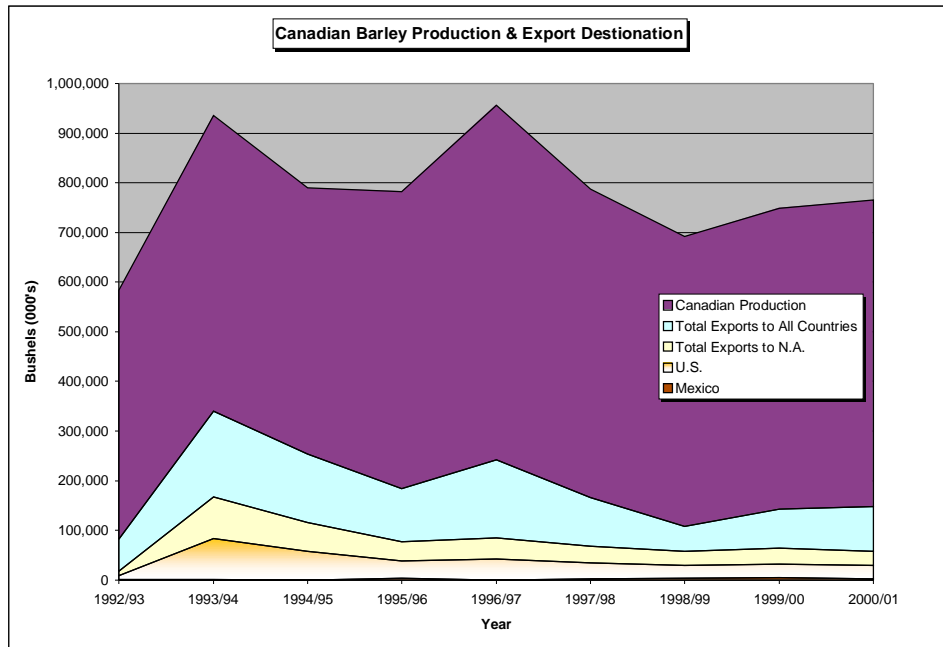
Source: Field Crop Reporting Series – Statistics Canada

**Table 4: Canadian Barley Exports by Destination in 1992-2001 (000 bu)**

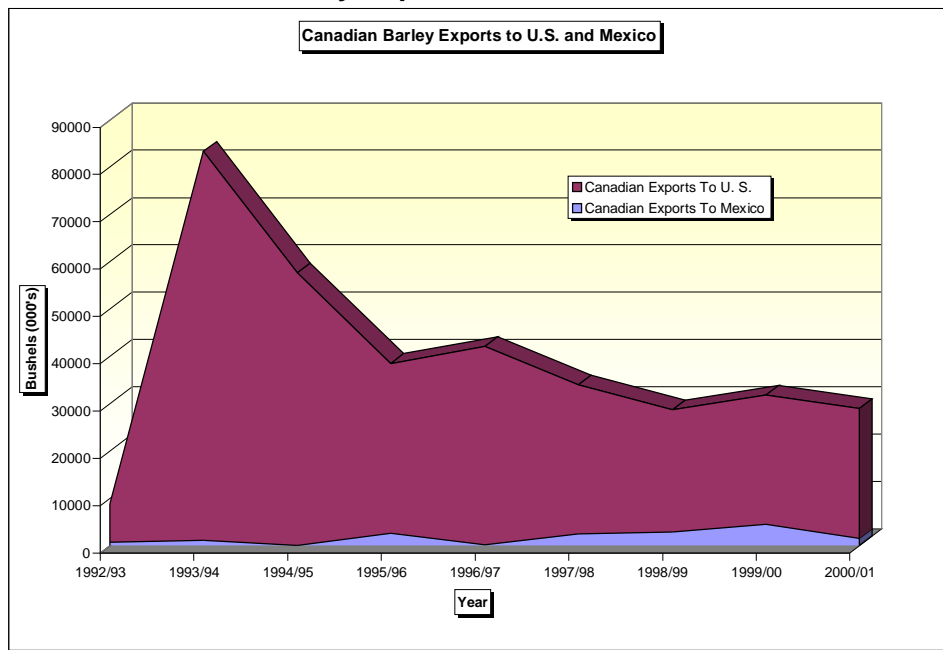
North America	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	Average
U.S.	21724	7992	82259	57641	35916	41933	31553	25904	27328	27420	35962
Mexico	3215	781	1148	0	2618	138	2480	2848	4547	1562	1929
Total N.A.	24939	8772	83407	57641	38534	42071	34033	28752	31875	28982	37891
Total Exports to All Countries	153449	64192	173244	138246	107106	157950	97691	50568	79320	89148	117073
% to NA	16.25%	7.06%	48.14%	41.69%	35.98%	26.64%	34.84%	56.86%	40.19%	32.51%	32.37%
Total Not Including N.A.	125509	115420	89837	80605	68572	115879	63658	21816	47445	60167	79182

Source: Field Crop Reporting Series – Statistics Canada

**Chart 7: Canadian Barley Production & Export Destinations**



**Chart 8: Canadian Barley Exports to U.S. and Mexico**



## 2.6 Canadian Wheat Board Control Over Canadian Exports

The Canadian Wheat Board has the sole responsibility for marketing malting barley within Canada and all barley and malt exports from Canada. The challenge of marketing malting barley is that the barley is selected as suitable for the malting process by the malt user, not by the Canadian Wheat Board.

The procedure followed in Canada is that a producer must signal his/her intention to sell malting barley by assigning the appropriate acreage to the designated barley in the CWB permit book. This facilitates the issuance of a permit if the barley is selected for malting. Then a farmer submits a representative sample to a local elevator manager or grain dealer, who will in turn send it for evaluation at the company's laboratory. Samples may also be submitted directly to a malster for evaluation.

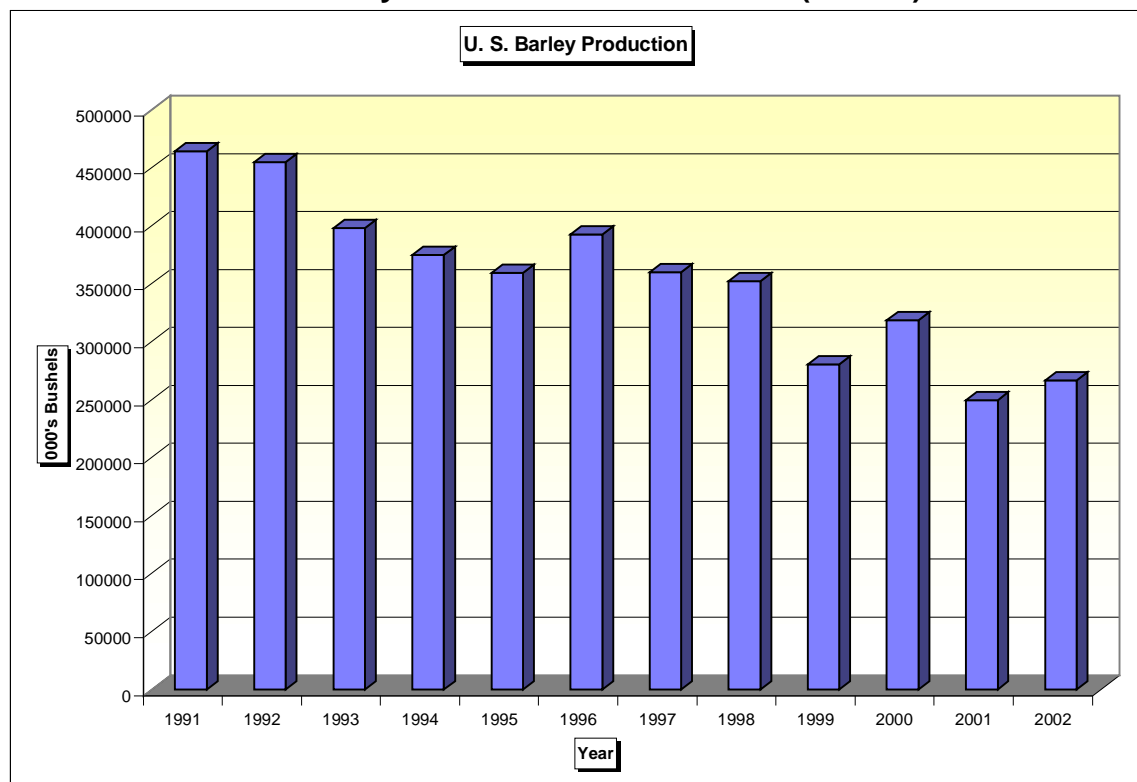
When a barley sample is determined to be of malting quality, the elevator company will request a permit from the CWB to allow designated barley delivery. The CWB has two pricing tools for barley produced: 1) a feed barley price, and 2) a premium for special select barley. It is the latter price pool that sets the prices for barley into the malt market. Although actual settlement prices for specific barley sales to maltsters or exporters may vary, the returns to the producer are based on the designated barley pool price calculated by the CWB.

Deferred delivery by the CWB to malster is one of pluses for utilizing Canadian barley.

## 2.7 U. S. Barley Production

U.S. barley production has fluctuated significantly in the past 10 to 15 years, ranging from 464.3 million bushels (10.1 MMT) in 1991 down to 226.9 million bushels (4.9 MMT) in 2001. U.S. barley production peaked in 1986 at 608.5 million bushels (13.2 MMT). The top three barley-producing states in the U.S. are North Dakota, Idaho and Montana.

**Chart 9: U.S. Barley Production for 1991-2002 (000 bu)**



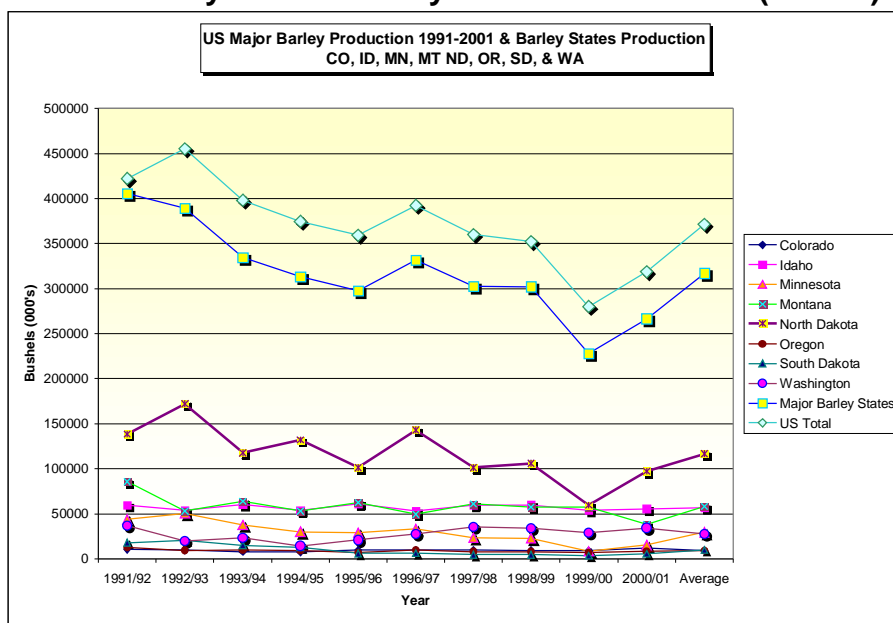
Source: USDA National Agricultural Statistics Service

**Table 5: U.S. Barley Production by State for 1992-2001 (000 bu)**

Year/State	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	Average
Colorado	9270	7650	7470	10000	9568	9612	9430	9030	12075	8560	9267
Idaho	54000	60000	54000	60800	53290	59250	59280	53820	55480	50250	56017
Minnesota	50625	37700	30000	29000	33280	23460	22825	8460	15360	7975	25869
Montana	52800	63800	52800	62400	49450	60950	57600	57500	38000	29520	52482
North Dakota	172250	117600	132000	101250	143000	101250	106150	59520	97350	79750	111009
Oregon	9450	9750	9490	7220	9600	8004	8060	6885	8400	4500	8136
South Dakota	20520	15120	13020	6080	6380	4560	4560	3552	5775	4056	7425
Washington	19800	23115	14335	20880	27280	35520	33800	28910	34300	21000	25894
Major Barley States	388715	327085	313115	296630	331848	302606	301705	227677	266740	205611	296099
U.S. Total	455090	398041	374862	359376	392433	359878	352125	280292	318728	249590	354042

Source: USDA National Agricultural Statistics Service

**Chart 10: U.S. Barley Production by State for 1992-2001 (000 bu)**



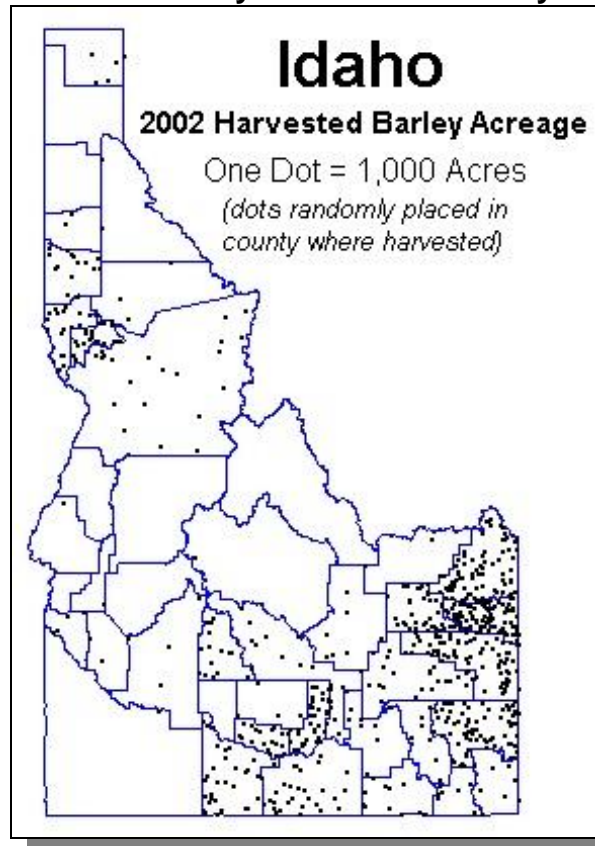
The states of Colorado, Idaho, Minnesota, Montana, North and South Dakota, Oregon and Washington account for more than 80% of all barley produced in the U.S. and the top three states of Idaho, Montana and North Dakota account for more than 60% of total U.S. production.

### Idaho Barley Production:

More than 85% of Idaho barley production is concentrated in the south-central and eastern part of the state, where irrigation supplies are available from the Snake River and groundwater aquifer and markets are readily available. Two malt plants are located in the cities of Pocatello and Idaho Falls and a large and expanding dairy/cattle feeding market exists in southern Idaho. The two malt plants are owned by Great Western Malting Company at Pocatello (6 million bu / 92 TMT) and Anheuser Busch Company

(16 million bu./ 240 TMT). Grupo Modelo has broken ground on a new malt house in Idaho Falls adjacent to the Anheuser-Busch facility (6.5 mbu / 100 TMT).

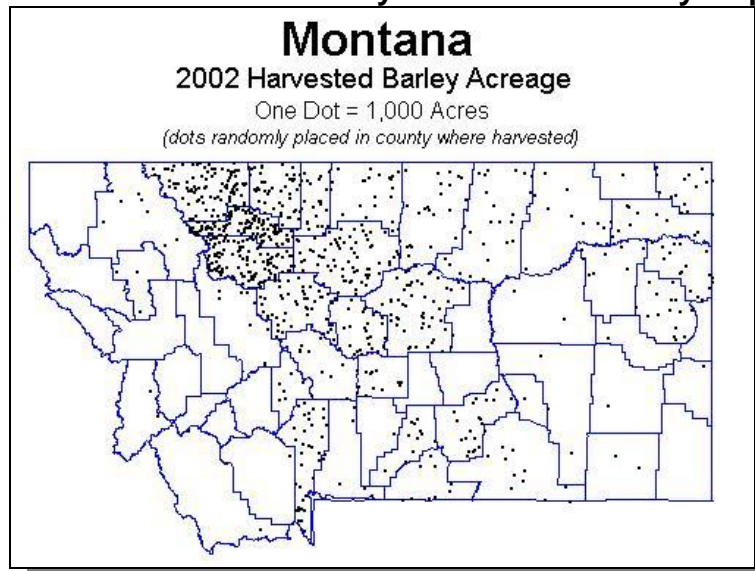
**Chart 11: Idaho Barley Production Density Map**



**Montana Barley Production:**

Montana's production of barley (mainly two-row) is centered around an area known as the Fairfield bench just northwest of Great Falls. International Malting Co. (Froedter t) has announced the construction of a new malt plant in Great Falls by 2005 (8 mbu / 125 TMT).

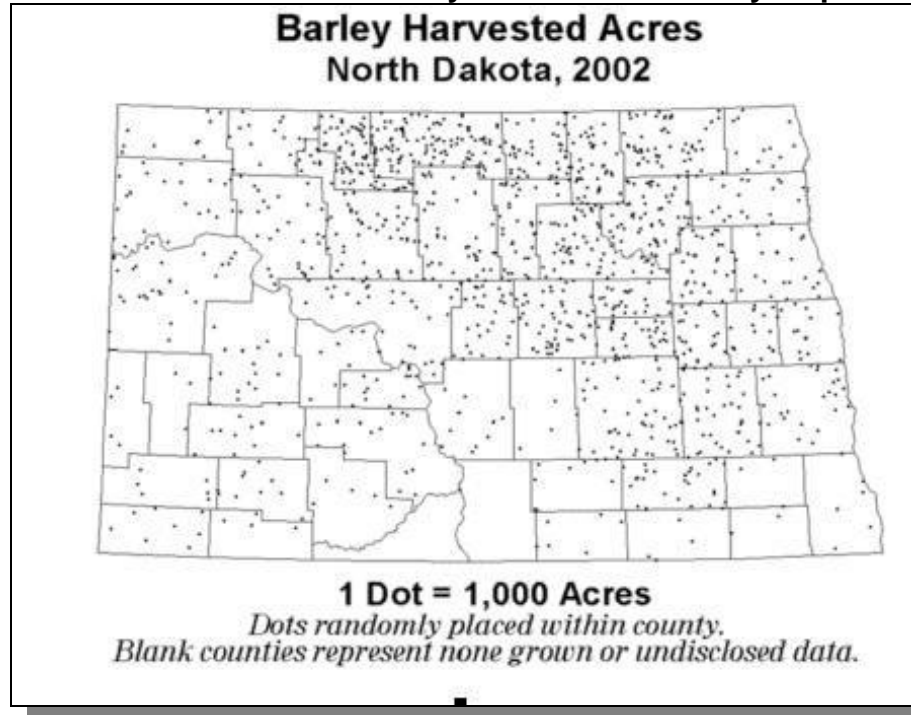
**Chart 12: Montana Barley Production Density Map**



## North Dakota Barley Production:

North Dakota barley production is spread all over the state. There are two main malting facilities serving the state: the Cargill Malt facility at Spiritwood (18 million bushels / 280 TMT) and the A-B facility in Moorhead, MN (6 million bushels / 92 TMT), which is across the river from Fargo, ND.

**Chart 13: North Dakota Barley Production Density Map**



## 2.8 U.S. Barley Utilization

Domestic U.S. malting usage has remained fairly steady during the past five years, with domestic malting usage at about 170 million to 173 million bushels, or 57% average during the past three years. Domestic feed usage has fluctuated more noticeably, depending on available supplies of barley and competing feed grains, averaging about 31% of total U.S. supply. Exports have average about 12% during the past three years.

## 2.9 U.S. Barley Exports

U.S. barley exports have fluctuated during the past 10 years, depending on available supplies and world prices. In the last five years, U.S. exports have been in the range of 27 million to 58 million bushels, or 6% to 13% of total U.S. supply.

**Table 6: U.S. Barley Exports by Destination, 1998/99 – 2002/03 (000 MT)**

Year	1998/99	1999/00	2000/01	2001/02	2002/03
Japan	290.0	422.2	337.3	388.2	293.4
Canada	22.2	41.5	31.3	32.0	94.2
U.K.	23.9	16.0	21.7	18.4	21.6
Mexico	122.2	93.8	104.3	112.7	70.5
Ireland	10.3	9.4	13.2	15.0	11.3

Saudi Arabia	506.9	0	0	360.3	0
South Africa	24.7	0	0	0	0
Spain	1.8	0	0	0	38.6
Belgium	1.5	3.1	7.3	4.3	1.7
Taiwan	94.2	.055	0	.058	0
China	0	0	0	56.6	0
Jordan	52.5	0	50.0	0	0
Morocco	0	0	0	39.8	0
Tunisia	0	0	24.0	18.4	0
Cyprus	51.0	26.3	0	0	0
Argentina	0	6.7	0	0	0
Transshipment	357.6	0	0	52.5	0
<b>Total U.S. Barley Exports</b>	1,562	619.6	612.7	1,258	570.8

Source: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics

In the last five years, the top five destinations for U.S. barley exports were Saudi Arabia, Japan, Mexico, Canada and Taiwan. The top destination for both U.S. and Canadian barley exports has been Japan during the past three years.

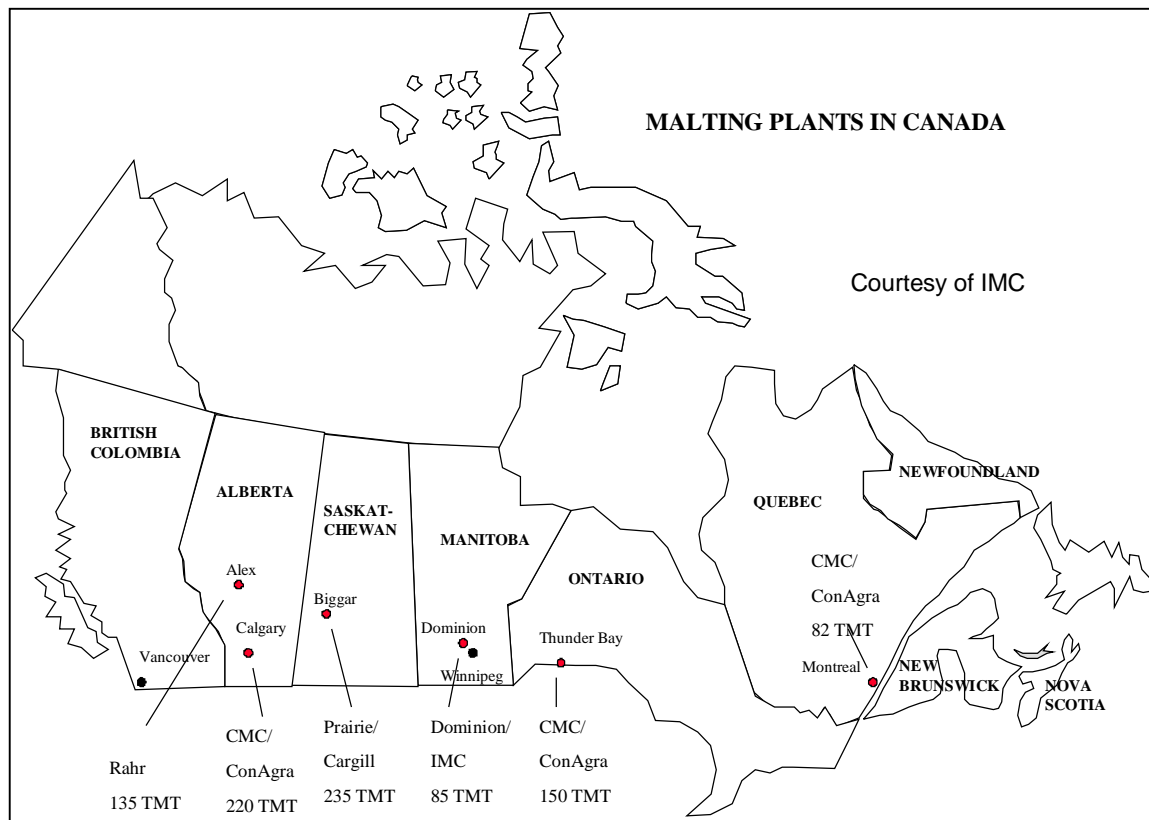


## SECTION III: MALT PRODUCTION AND EXPORTS

### 3.1 Canadian Malt Production

Average annual production of Canadian malt is about 0.9-1.0 MMT ( 46.5 million bushels) of which approximately 0.4 MMT (20.7 million bushels) is utilized for domestic use and approximately 0.5 MMT (25.8 million bushels) are exported.

The Canadian malt plants that are primary exporters, include: Canadian Malting Company (ConAgra – now known as CT Malt) in Calgary, Alberta; Prairie (Cargill) in Biggar, Saskatchewan; and Rahr in Alex, Alberta.



Canadian malt industry has expanded over the last decade. Several new malting plants came on line, allowing for increased exports, as domestic malt demand remained relatively constant. The domestic market remains the largest market for Canadian malt, however growth prospects are limited. Exports also have flattened out somewhat in recent years, in large part due to drier than normal conditions on the Canadian prairies and lower Canadian malting barley production.

### 3.2 Canadian Malt Exports

Japan continues to be the largest importer of malt and is Canada's largest export market for malt. The U.S. is Canada's second largest export market for malt. Because of disease concerns and production losses in some U. S. barley production areas (most notably North Dakota), there has been an increased demand for Canadian malt. However, as U.S. maltsters and brewers expand their U.S. production capacity, Canadian exports to the U.S. are expected to level off.

While Canada has been a strong exporter of malting barley to China, malt exports to this largest Asian market are significantly less due to higher import tariffs that favor imports of barley over malt. China's malt import tariff was reduced from 26% in 2001 to 10% as a condition of China's accession to the World Trade Organization. While some feel that this tariff reduction might result in increased malt exports in the future, it is likely that China will continue to favor malting barley imports as they have made substantial investments in increasing their own malting capability.

Canada has exported between 20 and 40 TMT of malt to Mexico in the past four years:

- 1999 – 40 TMT or 2,100,000 Bushels
- 2000 – 20 TMT or 1,033,000 Bushels
- 2001 – 32 TMT or 1,653,000 Bushels
- 2002 – 36 TMT or 1,860,000 Bushels

*Source: Malt Industry Association of Canada*

### **3.3 U.S. Malt Production**

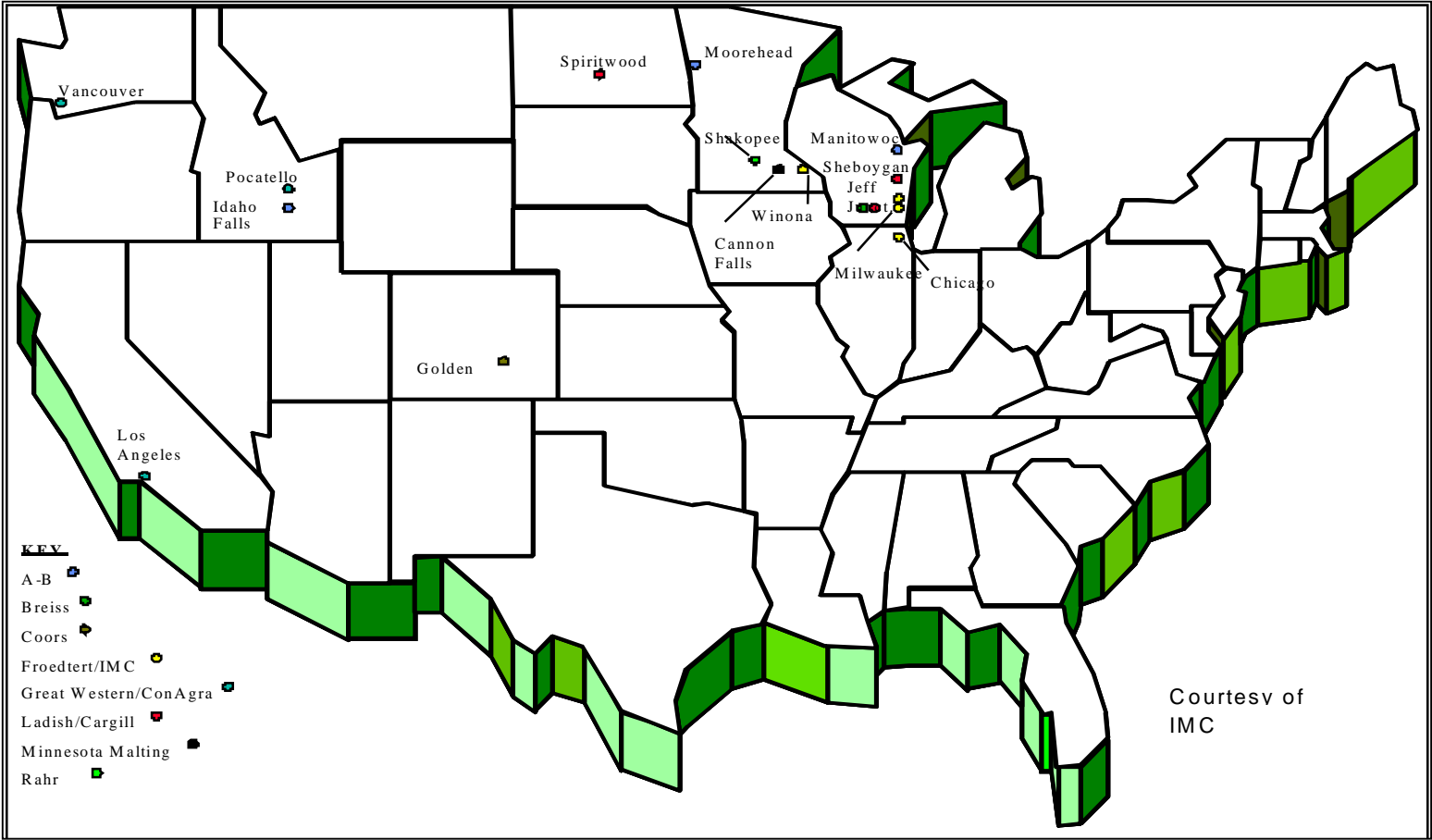
U. S. malt plants predominantly produce malt for the U.S. brewing industry, which is the largest in the world. According to the U.S. malt industry, the estimated U.S. malt capacity in 2003 was approximately 2.3 MMT, with about 1.7 MMT of capacity owned by maltsters and 0.6 MMT owned by breweries.

The major U.S. commercial maltsters include:

- Breiss Malting Company in Chilton, WI
- Cargill in Jefferson Junction and Sheboygan, WI (idled); and Spiritwood, ND
- Froedtert/IMC in Great Falls, MT (announced); Jefferson Junction and Milwaukee, WI; and Chicago, IL
- Great Western Malting Co. in Pocatello, ID; and Vancouver, WA
- Rahr Malting Co. in Shakopee, MN

New U.S. capacity is being brought on line in 2004 and 2005: Anheuser Busch is doubling its existing malt plant in Idaho Falls, ID, from 8 million bushels (125 TMT) to 16 million bushels (250 TMT); International Malting Co. (Froedtert) announced they would begin construction of a 8 million bushel plant (125 TMT) in Great Falls, MT, this year; Froedtert is completing expansion of its existing Winona, MN malt plant with four new kilns with an increase in production from 5 million bushels (77 TMT) to 7.5 million bushels (115 TMT); and Grupo Modelo, Mexico's largest brewing company, is constructing a 6.5 million bushel (100 TMT) malt plant in Idaho Falls. All of these expansions are expected to be on-line by 2005 (requiring additional barley from 2004 crop).

# U.S. Malting Plants



### 3.4 U.S. Malt Exports

**Table 7: US Malt Exports by Destination 1998/99 – 2002/03, (000 MT)**

<b>Country of Export/TMT</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Canada	2.2	1.7	1.9	1.6	3.6
Dominican Republic	35.7	34.9	14.1	0.48**	0.65**
Japan	40.7	36.7	25.0	31.1	12.5
Mexico	45.1	63.8	70.7	79.1	72.3
Philippines	3.53	0	0.54	1.9	1.0
<b>Total Exports*</b>	<b>129.4</b>	<b>146.6</b>	<b>118.0</b>	<b>115.7</b>	<b>90.4</b>

*Source: USDA Foreign Agricultural Service*

*\* Total Exports for All Countries Not Just Countries Listed*

*\*\* U.S. malt industry sources indicate U.S. malt exports to Dominican Republic were .30 in 2001 and .18 in 2002.*

The U.S. average exports of malt over the last 5 years were about 120 TMT. Mexico continues to be the largest importer of U.S. malt (ranging from 45 TMT to 79 TMT), followed by Japan (ranging from 12.5 TMT to 40.7 TMT). Canada imported a small amount of U.S. malt, ranging from 1.6 TMT to 3.6 TMT.

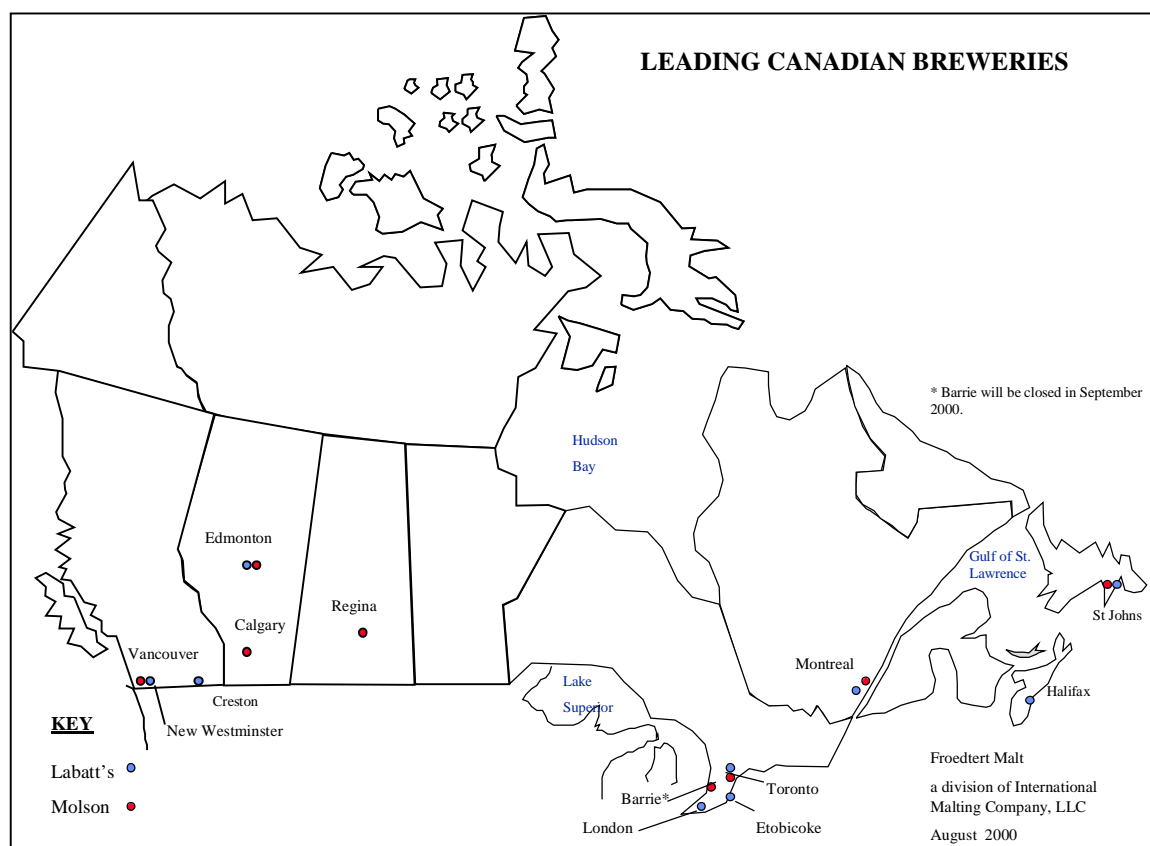
### 3.5 Mexico Malt Production

It is estimated that the Mexico malt capacity is 430 TMT (approximately 28 million bushels). *Source: Mexico Industry Sources*

## SECTION IV: NORTH AMERICAN BREWING INDUSTRY

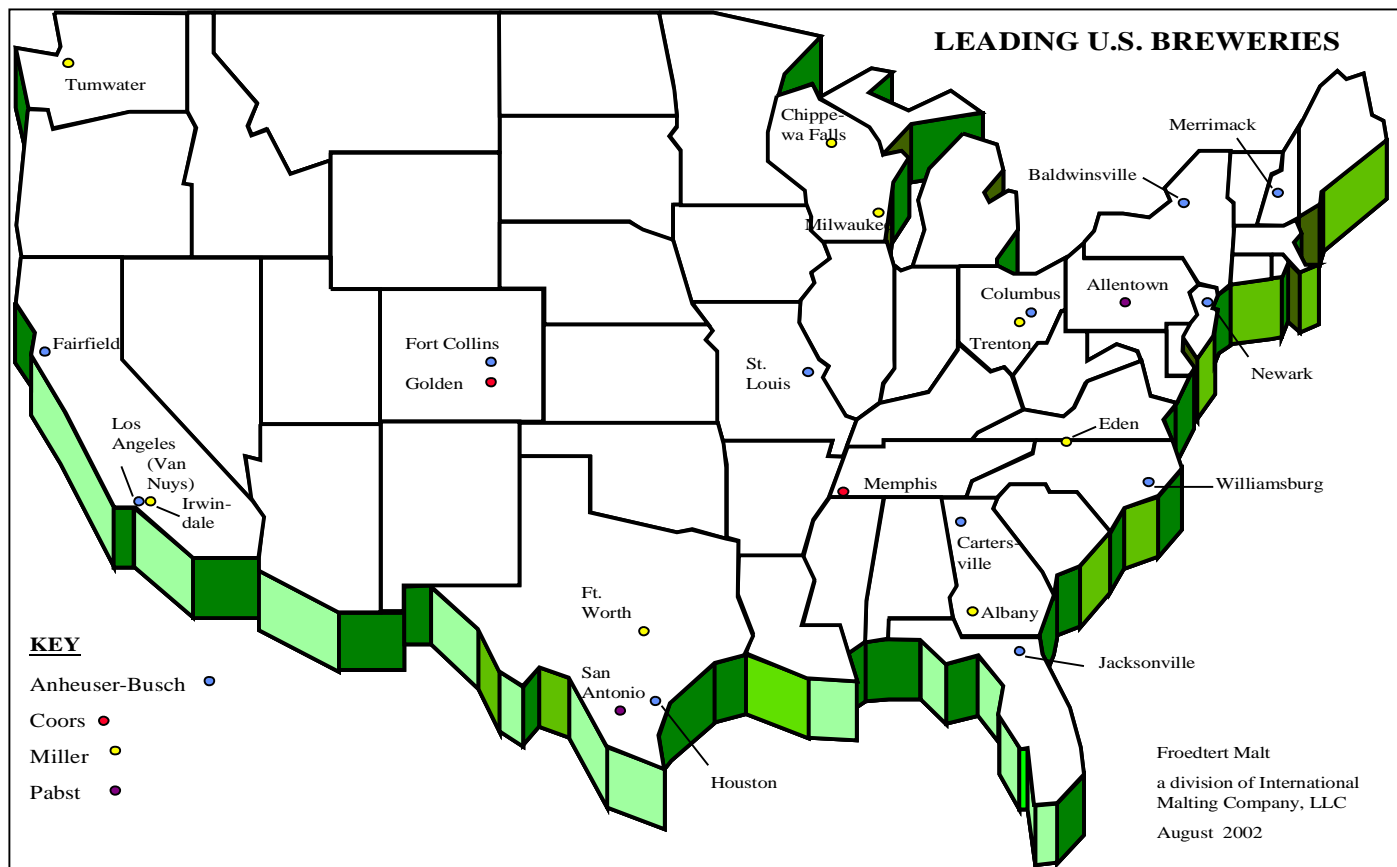
### 4.1 Major Canadian Breweries

The Canadian brewing industry has been growing at modest levels for the past decade. The major Canadian breweries are Labatt's and Molson and most of their facilities are located in close proximity to each other across Canadian-U.S. border.



### 4.2 Major U.S. Breweries

The major U.S. breweries are located generally south or east of the barley and malt production areas, requiring rail transportation for the majority of their inbound malt deliveries. The location of the breweries is centered on both tradition and desire to minimize outbound transportation costs to major consumer markets. While there are a significant number of specialty and micro-breweries spread around the U.S., the four major brewing companies in the U.S. are: Anheuser-Busch, SAB-Miller, Coors and Pabst.



### 4.3 Major Mexican Brewers

Two major Mexican brewing companies are:

**Grupo Modelo** – GModelo brews Corona, the leading import beer in the U.S. GModelo operates three malt plants and seven breweries in Mexico and has the exclusive license agreement with Anheuser-Busch to brew Budweiser, O'Douls and Bud Light in Mexico. GModelo holds a 62.7% market share of domestic and exported Mexican beer market. They experienced a 1.3% growth rate last year and expect steady growth in 2003.

GModelo is currently building a new malt plant in Idaho Falls, Idaho, to produce malt exclusively for the company's Mexico brewing operations.

**GModelo malt plants** -- GModelo produces about 70% of their own malt requirements at these three plants in Mexico. They estimate that 30% of malt needs are imported, chiefly from the U.S. The import level varies from year to year depending the local Mexican supply of malting barley.

#### **Extractos Maltos – Mexico City**

90 TMT capacity

Annual barley imports less than 20 TMT

Rail delivery for imported barley – 26 car capacity (maximum); truck delivery for domestic barley.

#### **Cebados Emaltos -- Tlaxcala**

150 TMT capacity

Annual barley imports less than 20 TMT

Rail delivery for imported barley – 26 car capacity (52 car maximum); truck delivery for domestic barley.

**Zacatecas (opened in Dec. 2002)**

50 TMT capacity (potential 200 TMT)

Annual barley imports – none (they use imported malt at this brewery)

Rail and truck delivery – 26 car capacity (52 car maximum).

**GModelo breweries that use imported malt (5-16 car deliveries, 70 ton hoppers) --**

1. Mexico City
2. Tuxtepec
3. Guadalajara
4. Zacatecas
5. Cd. Obregon

Breweries that do not use imported malt:

6. Torreon
7. Mazatlan
8. Merida



**Cuauhtemoc Moctezuma (CCM, part of the FEMSA Group)**

Ave. Alfonso Reyes 2202 NTE

Col Bella Vista

Monterrey, Mexico 64442

Tel: 011-52-81-8328-5000

Fax: 011-52-81-8328-5744

[www.femsa.com.mx](http://www.femsa.com.mx)

Alfredo Martinez Urdal, General Director

Juan Francisco Lara, Procurement Manager, 011-52-81-8328-5738

CCM operates two malt plants and six breweries. They experienced slightly negative growth in domestic beer production in 2002. CCM estimates that about 20% of malt needs are imported, chiefly from the U.S. The import level varies from year to year depending the local Mexican supply of malting barley.

**CCM malt plants –**

**Monterrey**

40 TMT capacity

imports < 10 TMT of barley, all 6-row

Rail deliveries – 26 car trains via Laredo

**Grajales, Puebla – center of dryland barley production**

90 TMT capacity (plans underway to expand to 150 TMT in 2004-05)

Imports < 10 TMT of barley, all 6-row

Vessel via Port of Veracruz and truck delivery or Port of Tuxpan

**CCM breweries --**

1. Monterrey – very small quantity of imported malt (not often)
2. Tecate, Baja California – uses imported malt (20 TMT – all 6-row), all raw materials are imported, 4 rail cars/week
3. Orizaba – no imported malt
4. Toluca – no imported malt
5. Guadalajara, Jalisco – no imported malt
6. Navojoa, Sonora – very small quantity of imported malt (not often)



## **SECTION V: NAFTA**

### **North America Free Trade Agreement**

The North American Free Trade Agreement (NAFTA) took effect on January 1, 1994, uniting one of the world's largest free trading blocks with more than 390 million people and \$2.0 trillion in annual trade. The impetus for NAFTA was the reduction and ultimate elimination of import tariffs and expansion of trade between the three North American countries. Its effects, of course, have been tempered by WTO trade restrictions and agreements with other countries around the world.

Agriculture has two separate bilateral agreements underlying NAFTA – one between the U.S. and Mexico and the other between Canada and Mexico. At the outset, the U.S.' largest trading partner was Canada and the second largest was Mexico.

Shortly after initiation of NAFTA, the Mexican peso was severely devalued and the U.S. food exports plummeted. However, in recent years, the export of U.S. products has rebounded. Trade opportunities in foodstuffs from the U.S. into Mexico continue to center on rising per capita incomes in Mexico. The rise of more two-income families should continue to increase consumer demand for food products. Factors such as under- and unemployment, food handling infrastructure, and lack of transportation infrastructure continue to limit market potential. However, in recent years, the rail infrastructure has been privatized and there has been a marked increase in rail efficiency.

The U.S. is currently the major supplier of high value malting barley and malt to Mexico, primarily as a result of favorable market access terms negotiated under NAFTA. Under these terms, the U.S. enjoyed substantial market share of these products. Prior to full liberalization in 2003, the tariff-rate quota (TRQ) for U.S. malt and malting barley was 177,295 metric tons (80%), compared to 44,324 metric tons (20%) for Canada.

On April 28, 2003, the Government of Mexico and Mexican producer groups signed the National Agreement on Agriculture that provided \$10 billion in new assistance to Mexican agricultural industry to ensure its future competitiveness in the face of zero tariffs on most US and Canadian agricultural goods under NAFTA (note: Mexican barley producers do not receive government subsidies).

Barley and malt received special attention as “sensitive products” in Paragraph 59 of this agreement ... “For the remainder of sensitive agriculture and forestry products, including barley and malt, and those considered in the law of rural development sustainability, as basic and strategic products, imports of which shall be watched over very strictly and in case damage to domestic production is detected, the GOM will apply all legal mechanism of protection in force. “

## SECTION VI: BARLEY FREIGHT RATE ANALYSIS

Competitive transportation logistics are a primary factor in determining sales volume and destination for both U.S. and Canadian barley and malt.

It has been shown that manufacturing industries tend to locate where aggregate transportation charges will be the least. Does that hold true for malt barley and malt plants? Barley is a cool season grain and is grown in the more northern latitudes, mostly in the western U.S. and Canadian border states and provinces. These areas are typically thousands of miles from large population centers and the major beer consuming markets.

Malting barley moves from production areas by truck or rail to malt production facilities. Historically, the malt plants were centered near or adjacent to the breweries. In recent years, the malting industry has chosen to locate new plants near or in the center of malt barley production areas and further distances from the breweries, requiring bulk rail transportation to deliver the malt.

### 6.1 U.S. and Canadian Rail Systems Serving Barley Production Areas

There are four major North American railroads involved in the movement of barley from the Western U.S. and the Canadian prairies.

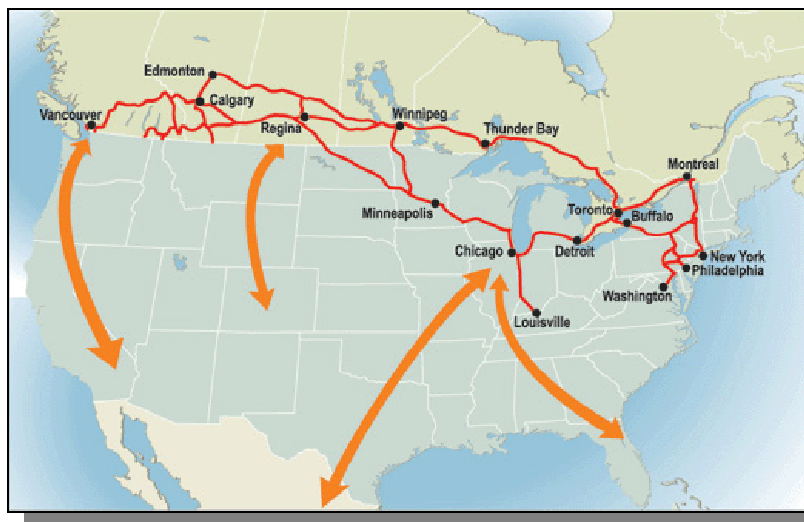
The UP controls movements out of western Washington, western Oregon and Idaho.



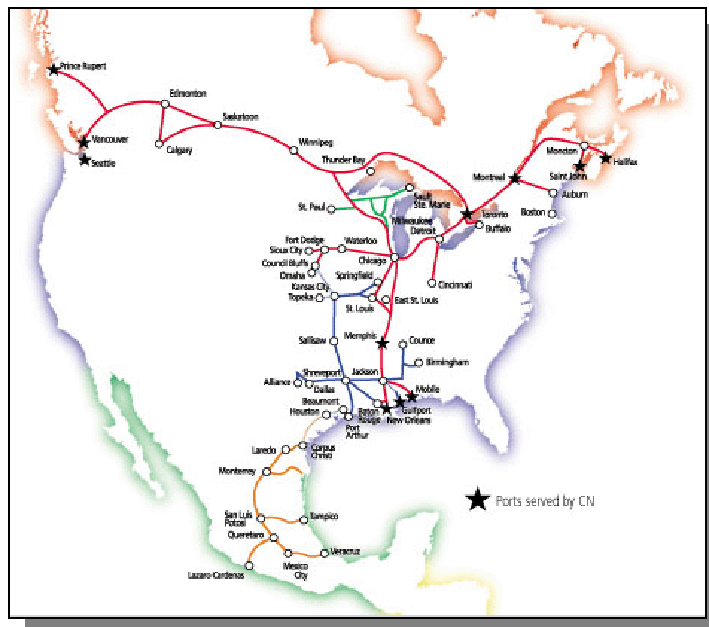
The BNSF controls the movements from Montana and North Dakota.



The Canadian Pacific (CP) has control over southern Canadian growing areas and moves through North Dakota via its US subsidiary known as the SOO Line.



The Canadian National (CN) controls the northern Canadian barley production areas. With its purchase of Wisconsin Central and the Illinois Central rail lines, CN has an uninterrupted rail path to the Mexican railroad TFM through its marketing relationship with the Kansas City Southern (KCS).



## 6.2 U.S. Railroad Industry Profile and Cost Structures

The railroad industry is characterized by high fixed costs and low marginal costs. The high fixed costs act as a barrier to new entries. This economic profile is associated with a natural monopoly, which is why the U.S. and Canada have chosen some form of economic regulatory oversight for the last 100 years. All major western railroads serve an array of agricultural rail customers, some of whom have transportation alternatives, and many who do not. When railroads have competition their rates are constrained to levels above their variable costs but many times not full costs. In the absence of inter- or intra-modal competition, railroads price above the average costs to make up for areas where they have competition. This costing methodology is known as “differential pricing”, but unlike every other industry that practices some sort of differential pricing, the railroads’ differential pricing is not based upon consumer demand but rather on “degree of captivity”. As a result, the railroads operated under rather extensive government regulation, up until 1980, to ensure fair pricing and service.

The Staggers Rail Act of 1980 was an attempt by Congress to deregulate the railroads similar to what Congress had already done in the airline and motor carrier industries. In 1980 there were over 40 Class I railroads (the largest class of railroad defined by the Surface Transportation Board in 2000 as having more than \$260 million in operating revenue), ensuring adequate competition. Today, after a series of major mergers there are only seven Class I’s (two are Canadian) and the four major U.S. Class I’s (BNSF, UP, CSX & Norfolk Southern) control over 95% of the rail business in this country.

How profitable are barley freight rates for the railroads? Costing a rail movement requires knowledge of rail cost inputs – what it costs a railroad to move a commodity.

The Surface Transportation Board (STB), which oversees regulatory aspects of the nation's railroads has developed a rail costing system called the Uniform Rail Costing System (URCS).

Rail costs are measured in terms of 'variable' cost. Variable costs are exactly what one would consider them to be, namely those costs that vary with output or production. On a railroad, 100% of variable cost would be that level at which just the variable costs are being met, but the fixed costs are not being met. The STB has set a rate level of greater than 180% of variable to be the level above which rates are considered *prima facie* unreasonable. Many economists believe that 'full cost' on a railroad occurs around 130-150% of variable costs.

Rail rates in captive rail areas (area of inadequate or non-existent rail competition) are generally found to be above 180% of revenue to variable costs with some rail rates on grain running as much as 300+% revenue to variable cost.

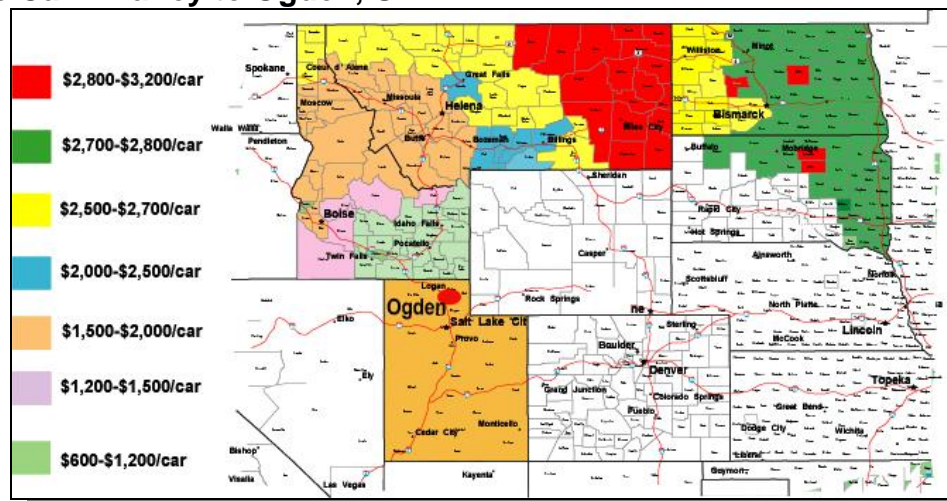
### 6.3 U.S. Barley Rail Rate Analysis

#### Three Major Barley Movements in U.S.:

According to USDA supply and demand balance sheets (average during past three marketing years), about 57% of U.S. barley is utilized in the food, seed and industrial markets (malting); 31% in the feed market; and the balance of 12% in export channels. This analysis looks at all rail movements into all three major markets from the major production areas in the U.S. Northern Plains and Canada.

- ✓ From barley production areas to major maltsters and/or breweries who have malt plants – truck and rail
- ✓ From barley production areas to feed lots and dairy milk sheds – truck and rail
- ✓ From barley production areas to points of export for both feed and malt uses - rail

#### Single Car – Barley to Ogden, UT:

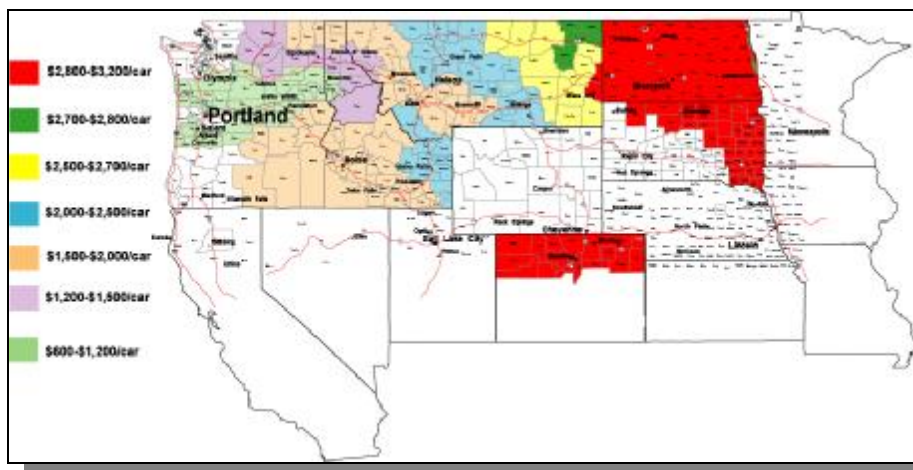


The analysis developed rate maps to indicate rail rate levels into various major price-setting markets. Using the Uniform Rail Costing System (URCS) costing model explained above, the rail rates on barley movements into Ogden, UT feed market were:

From Idaho origins: 143-198% of variable cost – generally in excess of 180%  
 From Montana origins: 150-233% of variable cost – generally in excess of 210%  
 From North Dakota origins: 140-200% of variable cost – generally in excess of 180%

It should be noted that in the Ogden movements, the railroads actually charge less from more distant origins than origins that are closer to the destination (see Montana and ND origins). This is known as 'inverse pricing' and is a pricing practice that tends, from the growers standpoint, to distort the market by allowing non-traditional product access to a market that it would not normally participate in. A standard C6 barley rail covered hopper car will load out about 3,847 bushels to the car. A freight rate of \$1000/car then translates to about 26 cents per bushel. A freight rate of \$3,200/car translates to about 84 cents per bushel.

### Single Car – Barley to PNW:



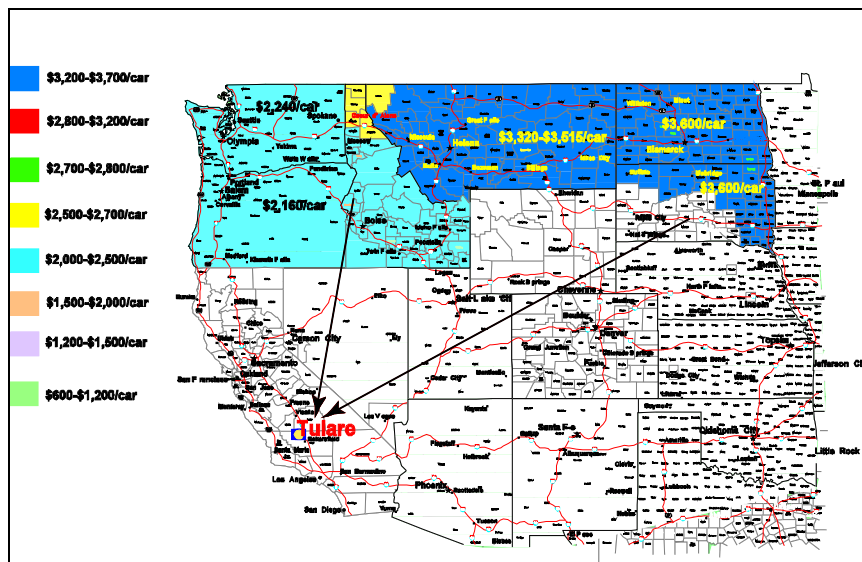
This movement is predominately an export market for U.S. barley producers. The rail rates ranged from just over \$850/car (\$.22/bushel) for short distances in Washington state to over \$2,900/car (\$.77/bushel) from North Dakota.

Using the URCS costing models the rail rates on barley movements into PNW were:

From Idaho origins: 160-200% of variable cost – generally in excess of 160%  
 From Montana origins: 160-200% of variable cost – generally in excess of 180%  
 From North Dakota origins: 160-200% of variable cost – generally in excess of 180%  
 From Washington origins: 249% of variable cost



## Single Car – Barley to Tulare, CA:



Tulare, CA is a major destination for domestic feed demand. The rail rates ranged from just over \$2,240/car (\$.58/bushel) for short distances in Washington state to over \$3,600/car (\$.94/bushel) from Montana and North Dakota.

Using the URCS costing models the rail rates on barley movements into Tulare were:

From Idaho origins: 155-206% of variable cost – generally in excess of 170%  
From Montana origins: 140-180% of variable cost – generally in excess of 155%  
From North Dakota origins: 140-180% of variable cost – generally in excess of 160%  
From Washington origins: 205% of variable cost

## 6.4 Malting Barley Freight Rate Analysis

The major U.S. barley production regions are captive to a single railroad and the rail movements are made generally under published tariffs. The Canadian malt barley rail rates are for movements to local malt plants or to export facilities in the U.S. Canadian railroads also publish rail rates to all of the crossover points allowing for development of a good picture of cross border comparisons of freight rates to common destinations. This analysis drew from more than 4,000 rail rates from carrier published rates covering the major barley movements from U.S. and Canadian origins.

Additionally an analysis was conducted on the entire universe of western barley rail rates to major Mexican railroad crossover points, namely Brownsville, Laredo, Eagle Pass and El Paso, Texas. These are the crossover points utilized by the railroads to interface with the two major Mexico based railroads - TFM and Ferromex (FXE).

<b>Cross Over Point</b>	<b>County</b>	<b>Major Rail Serviced By</b>
Calexico	Imperial	UP, FXE
Nogales	Santa Cruz	UP, FXE,
El Paso	El Paso	BNSF, UP, FXE
Presidio	Presidio	BNSF, UP, TXPF
Del Rio	Val Verde	UP
Eagle Pass	Maverick	BNSF, UP, FXE
Laredo	Webb	BNSF, UP, KCS, TFM, TM, TMVS
McAllen	Hidalgo	UP,
Harlingen	Cameron	BNSF, UP,
Brownsville	Cameron	BNSF, UP, TFM

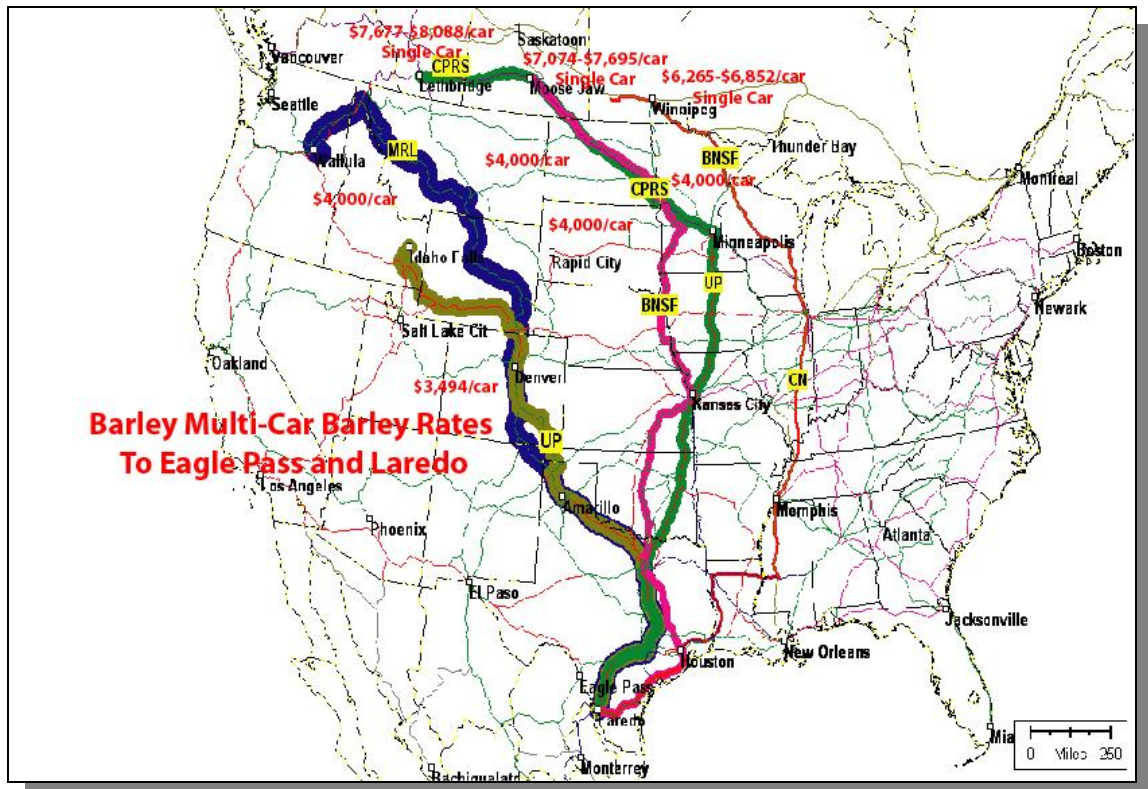
No railroad publishes rail rates to individual breweries in Mexico on malt or malting barley. All rates are published to the crossover points in AZ, TX and C.A. There have been a few wheat rates recently published to selected Mexican destinations which may indicate, in the future, that joint rates on malting barley and/or malt will be published with the Mexican railroads but currently the only published rates are combination rates (U.S./Canadian + Mexican RR's). Therefore, since the Mexican rail rates are a constant from each crossover point for the purposes of this analysis, comparison of all the barley and malt rail rates will be from U.S. and Canadian barley production areas to the Mexican crossover points.

#### **Malting Barley Rates to Eagle Pass and Laredo:**

The published freight rates from Colorado, Idaho, Montana, North Dakota and South Dakota to Eagle Pass and Laredo crossover points for malting barley movements have multi-car rates published on BNSF and UP of \$3,494/car (Colorado) to \$4,000/car (Idaho, Montana, North Dakota and Minnesota). The rail freight rates out of the Alberta, Saskatchewan and Manitoba are not published in multi-car rates but only for single car movements. For Alberta, the rail freight rates run \$7,677/car to \$8,088/car (U.S. \$). From Saskatchewan origins, the freight rates run \$7,074/car to \$7,695/car (U.S. \$) and from Manitoba the freight rates run from \$6,265/car to \$6,852/car (U.S. \$). These Canadian rates are over 200% of railroad revenue to variable cost levels i.e. extremely profitable. Based upon an average loading in a C6 covered hopper of 3847 bushels the published barley rail rates are:

State/Province	Rail Freight Rate (\$/car)	Rail Freight Rate (\$/Bushel) Based upon ave loading 3847 Bu)
Colorado	\$3,494	\$0.91
Idaho	\$4,000	\$1.04
Montana	\$4,000	\$1.04
North Dakota	\$4,000	\$1.04
South Dakota	\$4,000	\$1.04
Alberta (low)	\$7,677	\$2.00
Alberta (high)	\$8088	\$2.10
Saskatchewan (low)	\$7,074	\$1.84
Saskatchewan (high)	\$7,695	\$2.00
Manitoba (low)	\$6,265	\$1.63
Manitoba (high)	\$6,852	\$1.78





#### Malting Barley Rates to Brownsville, TX:

The published freight rates from Colorado, Idaho, Montana, North Dakota and South Dakota to the Brownsville crossover points for malting barley movements have multi-car rates published on BNSF and UP of \$3,494/car (Colorado) to \$4,000/car (Idaho, Montana, North Dakota and Minnesota). The rail freight rates out of the Alberta, Saskatchewan and Manitoba are not published in multi-car rates. For Alberta, the rail freight rates run \$7,864/car to \$8,088/car (U.S. \$). From Saskatchewan origins, the freight rates run \$7,261/car to \$7,695/car (U.S. \$) and from Manitoba the freight rates run from \$6,472/car to \$6,852/car (U.S. \$). Based upon an average loading in a C6 covered hopper of 3847 bushels the published barley rail rates are:

State/Province	Rail Freight Rate (\$/car)	Rail Freight Rate (\$/Bushel) Based upon ave loading 3847 Bu
Colorado	\$3,494	\$0.91
Idaho	\$4,000	\$1.04
Montana	\$4,000	\$1.04
North Dakota	\$4,000	\$1.04
South Dakota	\$4,000	\$1.04
Alberta (low)	\$7,864	\$2.04
Alberta (high)	\$8,088	\$2.10
Saskatchewan (low)	\$7,261	\$1.89
Saskatchewan (high)	\$7,695	\$2.00
Manitoba (low)	\$6,472	\$1.68
Manitoba (high)	\$6,852	\$1.78



### Summary of Malting Barley Rates:

The transportation reality is that Canadian rail rates are \$0.60 to \$1.00/bushel higher than rail rates from competitive malt barley areas in the Northern U.S. production. This is largely due to greater distances to the Mexican market. Most Canadian origins for malting barley and malt are between 20 and 30% further from Texas rail cross-over points than US origins.

In order to deliver Canadian malting barley to the Mexican crossover points, the Canadian price for malting barley must be \$0.60-\$1.00 less than the price offered for U.S. malting barley to the same destination, assuming the handling costs for elevation are equal. In other words, the Canadian rail rates are twice as high as those published rail rates from competing production areas in the U.S.

This large disparity in rail rates suggests that Canada cannot readily increase its delivery of malting barley into Mexico without steep discounts. Such steep discounts may also suggest that alternative export markets might be more favorable than movements to Mexico. Since the Mexico maltsters are tied almost exclusively to rail delivery, alternative ship/truck delivery would not prove to be economically feasible.

## 6.5 Mexican Railroads

There are several regional railroad companies in Mexico and there are two main railroad companies servicing the Mexico/U.S. border:

FERROMEX ([www.ferromex.com.mx](http://www.ferromex.com.mx)) FXE



Ferrocarril Mexicano (Ferromex) began operating on February 19th, 1998, after having obtained the concession from the Government of Mexico. With over 10,500 kilometers of track, Ferromex represents 80 percent of the coverage in the Mexican National Railway System, and serves more than 3,000 customers. Ferromex connects five major



urban centers in the country, five key border cities with the United States, four seaports on the Pacific Ocean and two more on the Gulf of Mexico. Since February 1998, Ferromex has invested over \$500 million as part of a five-year modernization program.

### TRANSPORTACIÓN FERROVIARIA MEXICANA (TFM)



([www.kcsi.com/tfm.html](http://www.kcsi.com/tfm.html))

Ferrocarriles Nacionales de México (FNM - National Railways of Mexico) was established in 1873. The Government of Mexico owned the rail network from 1937 until 1997 when it privatized the first of four railway regions. The Northeast Railway today is operated as Transportación Ferroviaria Mexicana (TFM), a key component of Kansas City Southern's NAFTA Railway. The Northeast Railway, Ferrocarril de Noreste, is the primary rail route in Northern Mexico linking Mexico City with Laredo, Texas, where over 50 percent of U.S.-Mexico trade crosses the border. The line also connects major population centers within Mexico in Monterrey and Guadalajara and the ports of Lázaro Cárdenas, Veracruz and Tampico. Its 2,661-mile line accounts for 19 percent of rail line in Mexico, yet carries 40 percent of the country's total rail cargo.

### FERROSUR ([www.ferrosur.com.mx](http://www.ferrosur.com.mx))

Ferrosur services Mexico City to the southeastern part of the country. They can interchange with TFM and Ferromex in locations like Mexico City, Tlaxcala, Veracruz and Puebla and to other southeastern states.



## ***SECTION VII: MALT RAIL FREIGHT RATE ANALYSIS***

### **7.1 Malt Rail Freight Rates**

Generally the BNSF publishes most of its malt rates in public tariffs, although it does move some malt under confidential contract. The UP moves most of its malt under confidential contract rates. Confidential rail contracts are allowed under the Staggers Rail Act of 1980. The railroads were suffering a number of bankruptcies and convinced Congress that one of the major reasons for the bankruptcies were over-burdensome regulatory oversight. Under this Act, U.S. railroads were given the right to enter into confidential contracts with rail customers in order to allow the railroads a way of competing with the motor carrier industry.

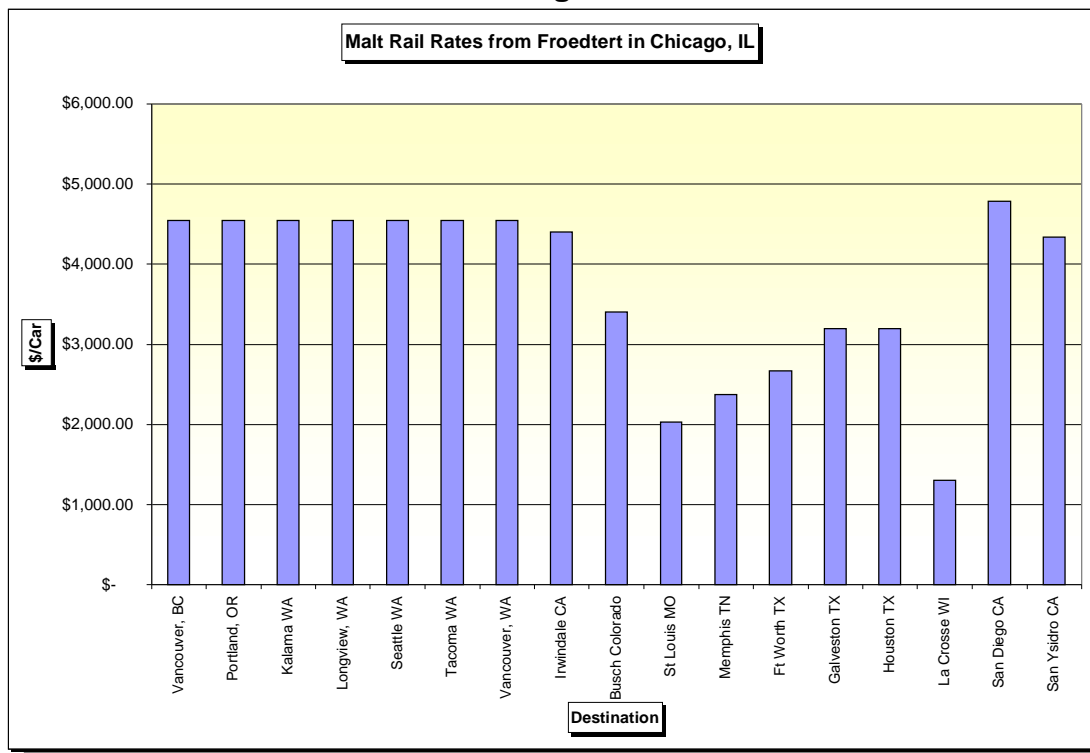
The BNSF has announced that it is doing away with confidential rail contracting in the coal industry and stopped entering into confidential transportation contracts on most agricultural production in the mid-1980s. The UP, however, continues to issue confidential contracts on both coal and some agricultural commodities.

The UP does publish mileage rate structures of a general nature on malt. These rates cover movements from 0 miles to 10,000 miles on both 75 ton and 100 ton cars. They run from \$5.83/mile down for distance under 300 miles to \$2.00-\$2.50/mile for 1,500-2,100 miles

The major U.S. commercial maltsters include:

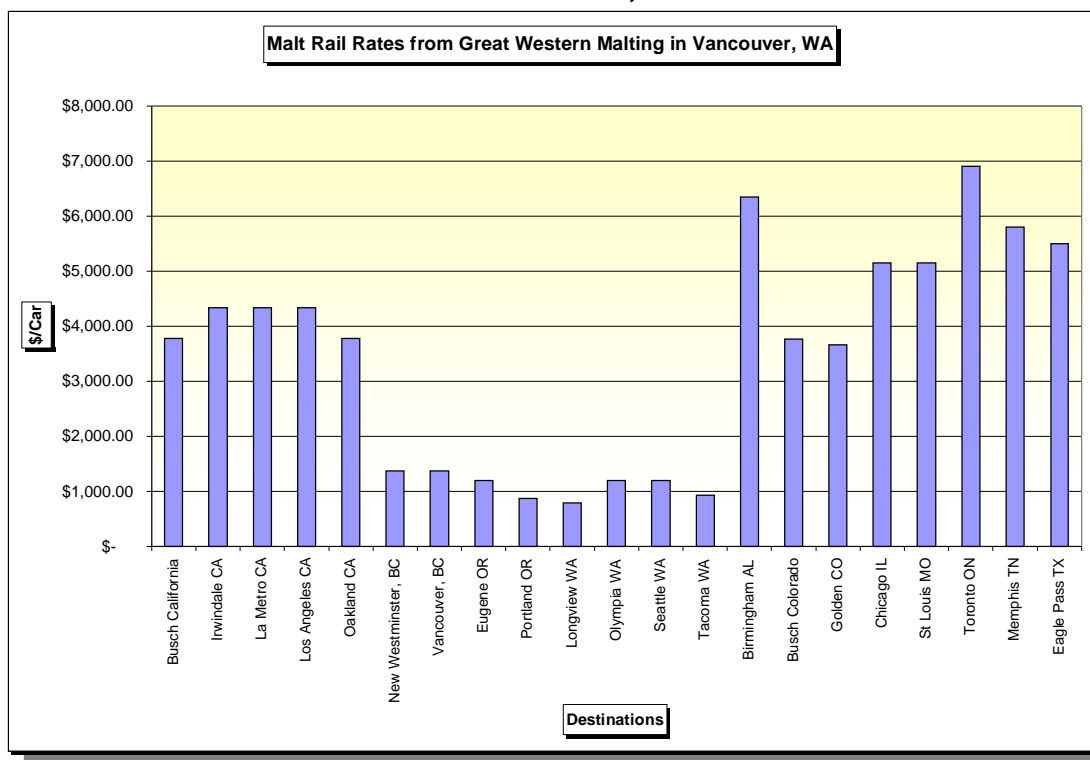
- Breiss Malting Company in Chilton, WI
- Cargill in Jefferson Junction and Sheboygan, WI; and Spiritwood, ND
- Froedtert/IMC in Great Falls, MT (announced); Jefferson Junction and Milwaukee, WI; and Chicago, IL
- Great Western Malting Co. in Pocatello, ID; and Vancouver, WA
- Rahr Malting Co. in Shakopee, MN

**Chart 14: Malt Rail Rates from Chicago Malt Plant**



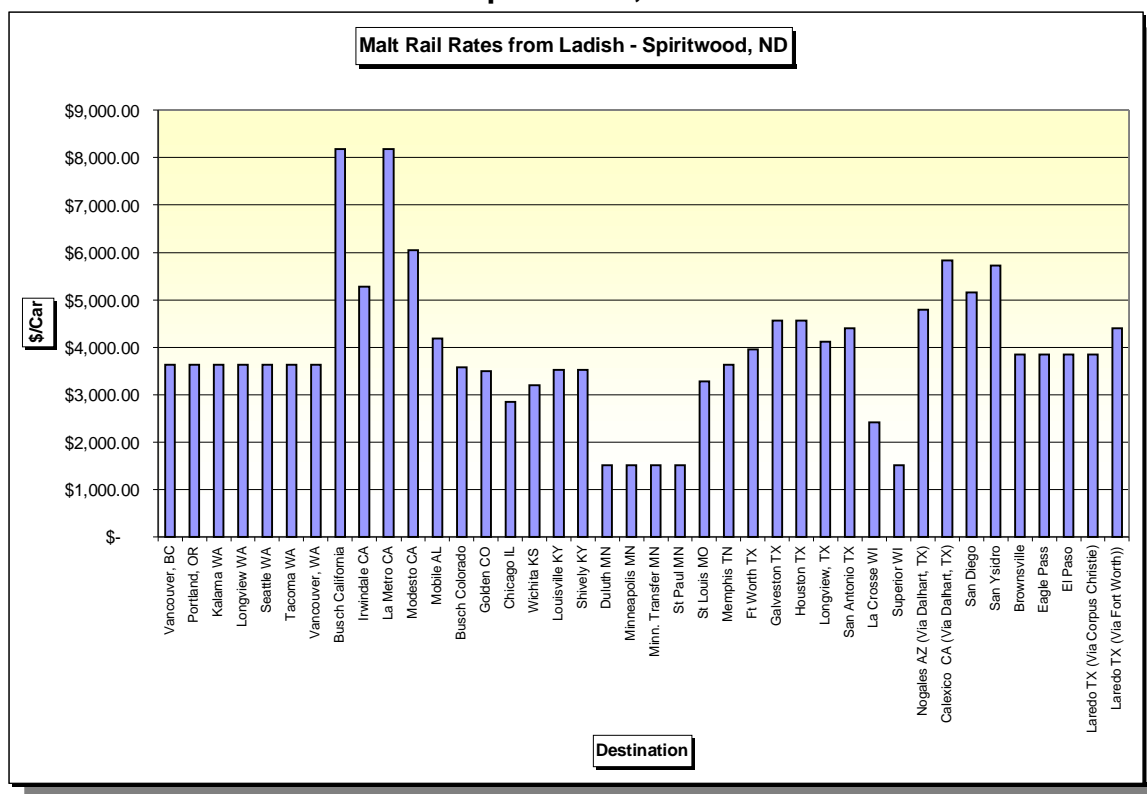
The malt rates from Froedtert in Chicago run generally \$2-\$3/mile in C5 and C6 (5000-6000 cubic feet) covered hopper cars. The shorter distances such as destinations in Tennessee, Wisconsin and Missouri have higher freight rates per mile but it is normal that shorter distances will have higher freight rates per mile than longer distances.

**Chart 15: Malt Rail Rates from Vancouver, WA Malt Plant**



The malt rates from Great Western in Vancouver run generally \$2-\$3/mile in C5 and C6 (5000-6000 cubic feet) covered hopper cars and for the longer distances with the shorter distances running in the \$4-\$6/mile range.

**Chart 16: Malt Rail Rates from Spiritwood, ND Malt Plant**



The malt freight rates from Cargill/Ladish in Spiritwood run generally \$2-\$4/mile in C5 and C6 (5000-6000 cubic feet) covered hopper cars and for the longer distances with the shorter distances running in the \$4-\$5/mile range.

For comparison, the intra Canadian malt rates that are published run in the \$2-\$3/mile range (U.S.\$) for distances of 700-1,500 miles, which are comparable to malt \$/mile rates in the U.S. However, when comparing malt rates to Mexico crossover points one finds the competitive advantage continues to favor the shorter distances from U.S. maltsters to the Mexican Crossover points.

## 7.2 Malt Rail Freight Rates to Mexico Crossover Points

Generally the BNSF publishes malt rail rates from the major breweries but the UP, CN and CP do not publish malt rail rates. The UP, CN and CP do move malt under confidential rail contracts to the Mexican cross-over points.

However, the confidential rail rates being charged can be estimated based upon transportation analysis. The rail rates on malt from Winnipeg, MB published by the BNSF are \$4,840/car, which is \$800-\$1,300/car higher or 16-25% higher than from Moorhead, Spiritwood and Minneapolis. The BNSF publishes this rate to move malt suggesting that it should be competitive enough to move traffic against confidential

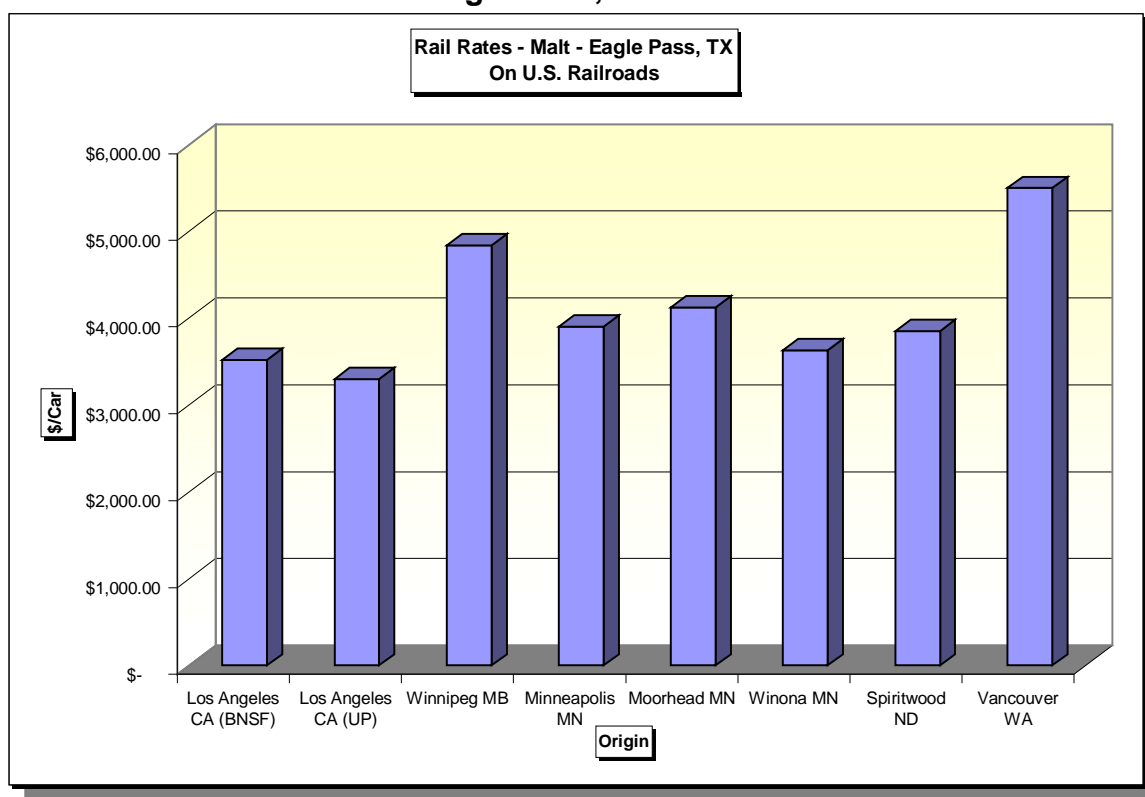


contract rates offered by CN from Winnipeg to Mexican crossover points. This higher transportation cost puts Canadian maltsters at a freight disadvantage compared to major U.S. maltsters. To compete, Canadian maltsters would have to bear the higher outbound transportation cost and match production and acquisition costs to participate profitably in the Mexican market. There will be a similar transportation differential for Biggar, Alix, Lethbridge and Calgary malt origins to Mexican crossover points.

### To Eagle Pass, TX:

The BNSF publishes malt rail rates from Los Angeles, Winnipeg, Minneapolis, Moorhead, Winona, Spiritwood and Vancouver. The UP publishes malt rail rates from Los Angeles. The CP and CN do not publish tariffs on malt movements but do issue confidential contracts on malt movements to Eagle Pass, TX. The malt rates to Eagle Pass on both the UP and BNSF as published \$2-\$3/mile range from Los Angeles, Minneapolis, Moorhead, Spiritwood Winnipeg and Vancouver, WA. These rates have a revenue/variable cost ratio of 160-170%.

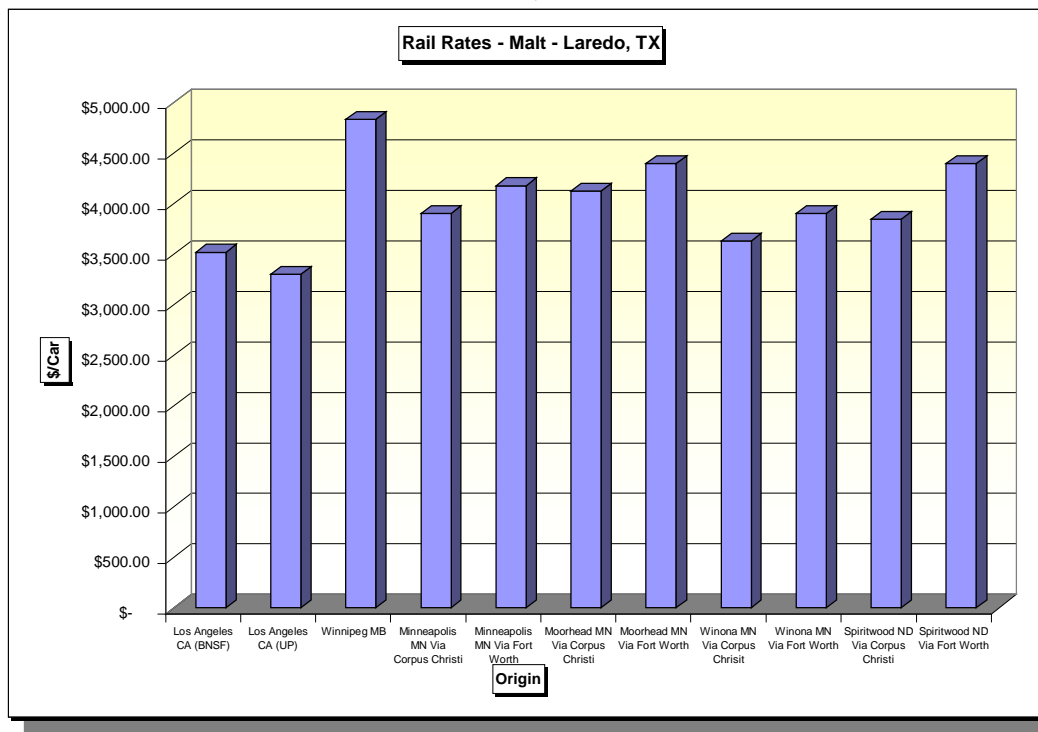
**Chart 17: Malt Rail Rates to Eagle Pass, TX**



### To Laredo, TX:

The BNSF publishes malt rail rates from Los Angeles, Winnipeg, Minneapolis, Moorhead, Winona, and Spiritwood. The UP publishes malt rail rates from Los Angeles. The CP and CN do not publish tariffs on malt movements, but do issue confidential contracts on malt movements to Laredo, TX. The malt rates to Laredo on both the UP and BNSF as published \$2-\$3/mile range from Los Angeles, Minneapolis, Moorhead, Spiritwood, and Winnipeg. These rates have a revenue/variable cost ratio of 150-170%.

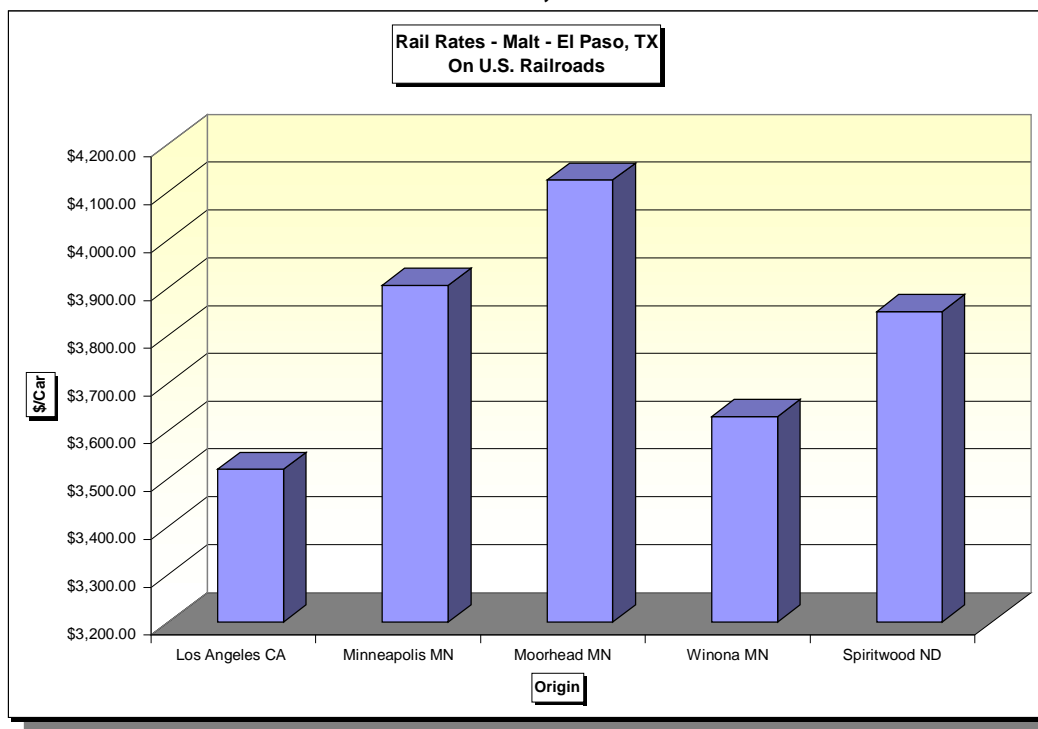
**Chart 18: Malt Rail Rates to Laredo, TX**



**El Paso, TX:**

The BNSF publishes malt rail rates from Los Angeles, Winnipeg, Minneapolis, Moorhead, Winona and Spiritwood to El Paso, TX. The UP does publish malt rail rates to El Paso. The CP and CN do not publish tariffs on malt movements but do issue confidential contracts on malt movements to El Paso, TX.

**Chart 19: Malt Rail Rates to El Paso, TX**



The malt rates to El Paso on both the UP and BNSF as published \$2-\$4.50/mile range from Los Angeles, Minneapolis, Moorhead, and Spirit wood. These rates have a revenue/variable cost ratio of 150-270%.

### **7.3 Malt Rail Rate Analysis**

Canadian published malt freight rates into the U.S. tend to penalize the Canadian maltsters when comparing published malt freight rates that U.S. rails charge maltsters in the U.S.

Canadian maltsters pay \$2,500-\$4,000/car to get malt to Chicago or TN breweries. U.S. maltsters pay rail rates that are only 50-60% of that to get their malt to local breweries. Revenue/variable cost ratios of 180-210%. Rail rates in Canada for malt for intra-Canada moves of 1,700 mile run in excess of \$2.00- \$2.75/mile for shipper owned cars. Revenue/variable cost ratios of 210-250%. For comparison purposes, malt rates in the U.S. are generally in \$2.00-\$2.50/mile for carrier owned cars and the distances are shorter. Revenue/variable cost ratios of 180-200%.

## **SECTION VIII: SUMMARY AND CONCLUSIONS**

### **Malting Barley and Malt Transportation Costs:**

We concluded the cost of moving malting barley from Canada to Mexico crossover points is \$0.60 to \$1.00/bushel higher than similar movements from U.S. origins. The only way to overcome these rate differentials is to absorb the additional rail charges or provide production efficiencies not being matched by U.S. competitors.

U.S. malt exporters have a considerable logistical advantage versus the Canadian maltsters on shipments to Mexico. The logistical advantage may be as high as \$1,800-\$2,500/car or \$0.30-\$0.40/bushel malt.

Furthermore, U.S. railroads should have an incentive to preserve their market share of movements by countering any efforts by Canadian railroads to offer more attractive rail freight rates into Mexico from Canadian origins. Any shipments for malting barley or malt from Canada are likely to move over the CN/NAFTA, CN/KCS/TFM or the CP/NAFTA rail connections. Such traffic will tend to deprive the U.S. railroads of U.S. malt or malting barley movements, therefore should provide an incentive to U.S. railroads to continue to maintain their dominance. While BNSF does have a direct connection into Winnipeg, the Canadian railroads would probably prefer to utilize their own connections that will give them longer hauls.

With the U.S. maltsters continuing to increase production capability, and the logistical disparity that exists between the U.S. and Canada, look for strong competitive positions from the U.S. maltsters and U.S. malt barley shippers against their Canadian counterparts, even with open borders.

Canada is likely to continue looking to Mexico as a viable market for Canadian malting barley and malt in the future, particularly in years of surplus production. However they must overcome rail logistical disadvantages to maintain or gain market share from U.S. suppliers.

### **Study Findings and Conclusions:**

- **Mexico will continue to import its two-row malting barley needs for the foreseeable future. What are the main factors that will determine sourcing?**
  - Mexico's annual increase in demand for beer continues to outstrip the rest of North America.
  - Mexico breweries are continuing to modernize both their brewing capacity and their physical distribution facilities.
  - Mexican railroads are making great strides in improving the efficiency of their operations, increasing loading capacity and reducing transit times.
  - Grupo Modelo has broken ground for a new malt plant in Idaho Falls, Idaho with intentions to supply its two-row malt needs from this new U.S. plant.

- Logistical costs for moving malting barley and malt to Mexico place Canadian products at a disadvantage compared to U.S. products. This logistical disparity to Mexican border crossings is calculated to run \$0.60 to \$1.00/bushel for malting barley and \$0.30-\$0.40/bushel for malt. Again, one of the primary factors is that Canadian origins for malting barley and malt are between 20 and 30% further from Texas rail cross-over points than US origins.
  - Canadian malting barley and malt exports are focused primarily on U.S. (six-row) and Asian markets where Canada does not have the same logistical disadvantages.
  - U.S. malt production is increasing while Canadian malt production shows no immediate signs of increasing.
  - **Conclusion:** U.S. suppliers have significant logistical advantages over Canadian suppliers.
- **What ability do Canadian malting barley and malt suppliers have to increase their exports to Mexico?**
    - In normal production years, Canadian barley producers and maltsters should have larger surplus supplies of both malting barley and malt, compared to the U.S.
    - Canadian Wheat Board has focused its malting barley marketing efforts on U.S. and Asian markets.
    - Canadian logistical differentials to Mexico, as compared with U.S. origins, are likely to encourage movements to other markets besides Mexico.
    - The Mexican brewing industry in general is not situated to receive malt via ship, therefore efforts to develop delivery alternatives to rail transportation would not prove viable.
    - **Conclusion:** Canada will continue to be challenged to increase their market penetration of the Mexico malting barley and malt markets.
- **What can U.S. barley and malt producers do to improve their competitive position in the Mexican market?**
    - For the past decade, Mexico has been the leading export customer of U.S. malting barley and malt.
    - The major U.S. brewers and maltsters have recently begun adding new capacity to the U.S. malt industry.
    - U.S. maltsters have the capacity and relationships to continue to supply Mexican brewing companies with malt.
    - Under normal production levels, U.S. maltsters are in a better position than their Canadian competitors to capitalize on Mexico's future growth potential due to significant freight rate advantages.
    - The demand for malting barley and malt is expected to remain very strong in Mexico, where beer demand has been growing at 5 percent per annum.
    - Mexico has a population of 100 million people, with a growing middle class that has adequate purchasing power to consume beer products. The population is also very young, estimated to be 50% under the age of 25, which is a positive demographic trend for future beer consumption.
    - **Conclusion:** Look for continued dominant competitive position for U.S. malting barley and malt shipments to Mexico.

- **Conclusion:** U.S. barley producers and maltsters must continue to maintain close ties and relationships with Mexico brewing companies, as well as maintain and increase its competitive physical distribution system to exploit our geographic advantages.